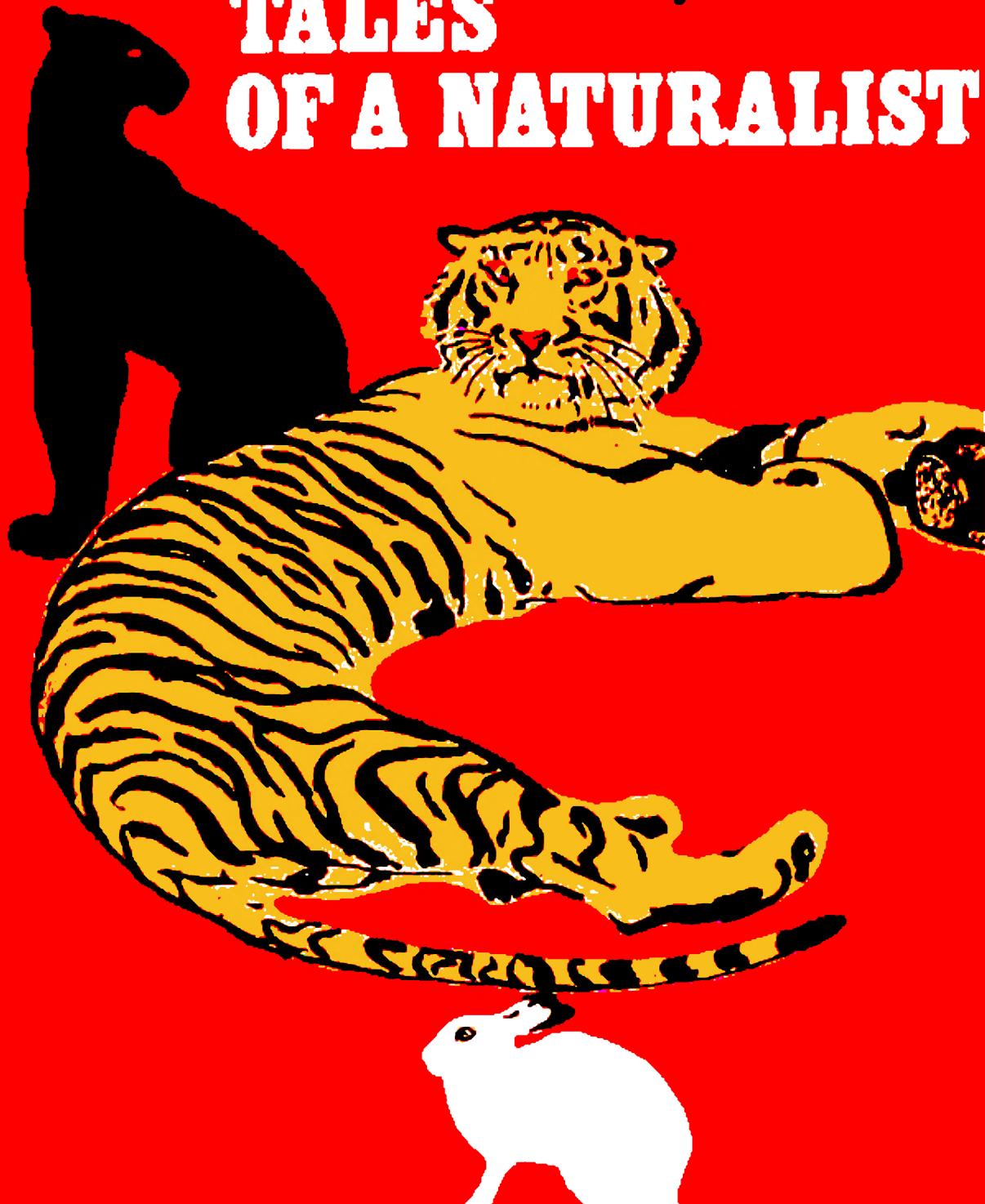


Pyotr Manteufel

# TALES OF A NATURALIST







**Pyotr Manteufel**

**TALES  
OF A NATURALIST**

Translated by *Linda Noble*  
Designed by *Georgi Nikolsky*



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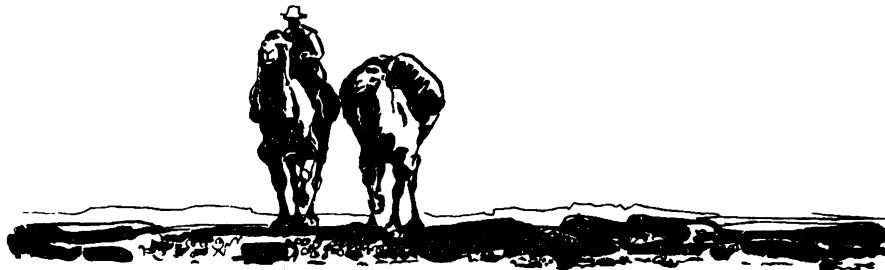
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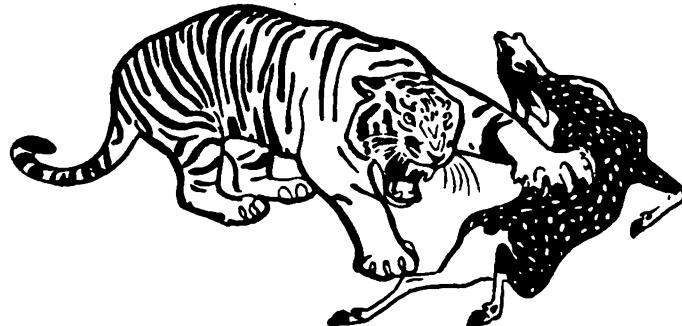
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## Foreword

There are different ways of loving nature.

One might love nature because it is generally accepted to love it and to say, "Look how beautiful," while actually feeling nothing: neither the beauty of the woods nor the charm of a bird's song. This kind of love does not count.

One may love nature with the sincere love of an artist, inquisitively, attempting to unravel her mysteries.

And finally, one may love nature with the demanding love of a master who sees its beauty, strives to know it, and at the same time learns to manage it, transform and multiply its riches. Such is how the author of this book, Professor Pyotr Manteufel (1883-1960), loved nature.

I was fortunate enough to spend some time with him in the woods as a young girl. I remember at the time it seemed to me that he had not the ordinary five human senses, but many more. When the enormous, broad-shouldered man strolled through the woods, his eyes, keen as a wise bird's, saw somehow better than those of his young pupils. He heard every crackle and rustle, he absorbed his surroundings into himself. He moved in long, noiseless strides, whistling to the birds, and they would answer him.

But the most interesting came later—he would explain every detail and every phenomenon to us, would draw conclusions and arrive at broad generalisations.

Contemplation—observation—experimentation. Such was the slogan of this scholar. And this path of research extends through all the stories collected under the title *Tales of a Naturalist*. These are not mere "sportsman's sketches". These are the tales of a great scholar who does not simply write entertaining stories about animals, but actually brings the reader to certain conclusions. This book contains but a portion of his tales, for they are many indeed.

For all seventy-seven years of the scholar's life (with the exception of those during the First World War and his service in the Red Army in 1921-22) were devoted to his beloved science. Manteufel traveled extensively throughout the country, from northern Yakutia to southern Uzbekistan, from Siberia to Kazakhstan. But one can hardly begin to name all the places he visited.

Manteufel's work in science began early in life. He was the pupil of such outstanding Soviet scholars as Williams and Menzbir.

Manteufel conducted an abundance of studies, many of which received wide recognition: the breeding of sables in captivity, the study of hare and marten communities, daring experiments in the acclimatization of valuable furbearing animals, to name but a few.

In these studies Manteufel used the zoo, where he headed the science department for fourteen years, expeditions, and, finally, the Soviet Union's numerous wildlife reserves.

In his work Manteufel always observed the animal in relation to its environment, he studied the flora, fauna, and soil, for only under these conditions is it possible to know the biology of a given animal. Pyotr Manteufel must also be recognized as an educator and a counselor to young people. He taught at many institutions of learning, and a number of his pupils—now scholars themselves—embarked on their path toward science in childhood in the Moscow Zoo's club for junior biologists, founded by Manteufel.

He gave this country more than one thousand gamekeepers and fur-farmers during his teaching years at the institute of fur-breeding, where he headed the department of systematization and biotechnology—a young and fascinating science. Manteufel taught young people not only biology and his scientific methods; he taught them love for their homeland, perseverance, accuracy in observation, a sense of friendship and comradery, courage and stamina.

Such was the man who wrote this book—a great scholar and a man with a great heart.

Yelizaveta Uspenskaya

## An Interesting Life

### In the Taiga

Once, while traveling around Siberia with three junior biologists from the Moscow Zoo, I found myself on the banks of the river Kan—the right tributary of the Yenisei.

We sailed down the river in a boat, then walked through boundless stretches of meadow, and finally found ourselves before mountain cliffs, between which the waters of the formerly wide and calm Kan rushed in turbulent rapids. In the mountains we were intrigued by a smallish creature—a rodent called a pika. This little beast is no bigger than a rat; in kinship it stands closer to the hare. It has the same furry paws and double row of upper incisors. Only its ears are small and it lacks a tail altogether.

In the mountains, not far from the river Kan we discovered a whole colony of pikas that autumn, preparing reserves of hay for the winter. They gnawed off stalks of grass or twigs from bushes and painstakingly spread them out before their underground



dwellings among the rocks to dry in the sun. The little creatures carried the ready hay to large projecting rocks, where they tucked it securely away.

Having identified the plant food the pikas were storing away for the winter, we were amazed at the variety and nutritional value of their food. Among the little stacks piled up beneath the projecting rocks one could find bean plants rich in proteins as well as many other plants which supplied these bustling little creatures with plenty of vitamins, fats, carbohydrates and medicinal elements.

It was fascinating to watch how the pikas would fly into a flurry when autumn clouds would roll in and begin spattering rain. The creatures would hastily gather in their mouths all the half-dried stalks and hide them under some kind of cover. It appeared as though these little workers were capable of reasoning. But this is not the case at all: they were acting upon an unconditioned reflex to outside stimuli.

In its many-thousand-years' struggle for survival, the pika has come to recognize these rains that ruin the food prepared for the winter as a certain signal of danger evoking in them a life-saving response: when raindrops begin falling on the earth, the food must be hidden far away. Those animals which did not do so suffered from hunger in the winter, and many perished; only the most capable survived.

In the taiga we met up with an old fisherman by the name of Matvei Golovko—a fine hunter and a serious naturalist. He told us about how in the winter, after a heavy snowfall, deer, stags and wild mountain rams would come to the pikas' colonies. They would eat the poor creatures' hay reserves, protected from the snow by projecting rocks, thus dooming the pikas to a hungry existence. The pikas are much less endangered by predators such as the sable and ermine, who live among the colonies but do not hunt the pikas for sheer sport; when sated they will pass by without touching the rodents.

What is more, these predators will not tolerate each other around one and the same prey. If a sable has moved in, neither the ermine nor the Siberian weasel will be in the vicinity, inasmuch as they are prey to the sable. If a weasel shows up it will drive away the speedy and agile ermine, the pikas' greatest peril since it can worm its way into any borrow where these little beasts might seek safety.

The fisherman conducted a subtle observation of nature and knew it well. He told us how once he saw a Pengmalm's owl perched on a juniper bush staring fixedly at him. Matvei walked carefully around the bush while the owl, not lifting its gaze, turned its head around more than 360 degrees. The old fisherman wondered, "Does that bird have any bones in its neck or does its head turn around on skin alone? How'd the owl keep from crashing into the trees when it took off and unwound its neck in mid-flight?"

I explained to Matvei that in general birds have very flexible necks, owls in particular. I told my curious companion that birds' heads are connected to their necks by one tubercular joint and not two, as are those of humans and other mammals. What is more, every individual vertebra in a bird's neck can be displaced to a great extent.

The old fisherman showed us a cliff where shortly before our arrival two huge brown bears had been fighting. He told how the she-bear—the reason for the fight—had sat calmly off to one side paying them no heed. She seemed not to notice the roars of the two giants and the tremendous power of the blows the furry rivals were dealing each other. After one particularly forceful swipe, the weaker competitor toppled over the edge. He rolled down the steep slope for some time, taking a small avalanche of rocks with him. Having clambered to his feet, the defeated rival looked up mournfully to where the victor, hanging over the cliff, was watching him. The loser stood for a spell in one place, then limped off.

“Did the bears roar loudly?” I asked.

Having given it some thought, fearing inaccuracy, the hunter replied,

“Yeah, like you’d expect.”

Not far from the bank of the river Kan, at the top of a slope, stood the fisherman’s tent. This was the site of an unexpected meeting he is not likely to forget soon. One night the old man stepped out of the tent to tend to the fire that was burning at the entrance. There was little firewood, so Matvei set out into the woods for fallen brush. Having gathered up a large bundle, he was walking back when a dark figure moved out of a small fir grove. “Probably a moose,” thought Matvei and called out to the uninvited guest good-naturedly. At that very moment the beast seized the old man in his front paws. It was a huge bear. Had the hunter not had that bushel of firewood in his arms, he would have been crushed by such an embrace.

With the very first abrupt move, both man and beast, losing their balance, went tumbling down the slope to the river and disappeared in its swift water. Only under water did the bear release his victim, and the current instantly pulled him away, while the hunter caught hold of a snag and cautiously stuck the tip of his nose out of the water. Some three or four meters downstream, the animal had likewise thrown his paw around a protruding rock. His head and neck could be seen above the water. The bear peered around to see if the man had surfaced. Then he climbed slowly onto the bank; water streamed off his fur. Rising on his hind legs, he turned his nose this way and that, sniffing the air noisily, but was unable to pick up the man’s scent. Up on top of the hill the beast lunged into the forest along the hunter’s old trail.

Having waited a couple of minutes until the bear had disappeared into the brush, the hunter made his way carefully up to the tent and grabbed his rifle. He chose the most advantageously illuminated

position and began summoning the bear to battle, calling him the most slanderous names.

“But that damned beast was a sly one!” said Matvei in conclusion. “He never did come out again, the bum. And to attack from the bushes in the dark—now that’s not fair!”

This story intrigued my young companions. I told them that by no means do all bears prey on humans and that such bears are actually rare. A bear is generally cautious, and in meeting a human will tend to retreat unnoticeably.

Proceeding down the river we encountered an abundance of sterlet heads. These were the remains of an otter’s meal. In many parts of the USSR the otter is a rarity, as it has been destroyed by hunters.

The fisherman held the otter in great respect, as he would a faithful ally. The reason for this is that by winter the sterlet disappear into deep pits and remain there in large schools. The otter has no trouble finding these sterlet hibernation spots and digs temporary burrows nearby in bushes on the bank. Following the animal, Matvei can determine without fail the place where he should fish for the sterlet. And when the reserves of fish in the hibernation pit are exhausted, the otter will move on to a new spot. The fisherman follows the otter’s trail to find it near another sterlet winter refuge.

“Winter on the taiga river is brighter with this critter around,” said Matvei. “It’s as though you’re not alone. As if another fisherman is living nearby...”

At that moment an emerald-green king-fisher alighted on a willow branch; the old fisherman called it simply a blue sparrow.

“I love that bird,” he said, gazing affectionately at the king-fisher. “The blue sparrow flies here in the spring, burrows nests in steep banks with its beak and hatches its young there. They feed their nestlings small fry. So it works out that I’m a fisherman and the

blue sparrow is a fisherman; I catch my fish through honest labor, and so does he."

The king-fisher kept casting side glances at the water and twitching its neck as if bothered by a high and stiffly starched collar. A minute later a splash sounded on the river. The bird vanished under the water, and when the rings settled on the surface we saw how agilely it paddled with its green wings. Three seconds later the king-fisher popped out of the water with a fish in its beak, perched on a branch and beat the head of its catch on it several times. The little fish stopped thrashing. Holding it firmly in its beak, the bird flew swiftly over the water to where its nest lay in a burrow in the steep bank. The feathered "fisherman" flew, following the bends in the river, and soon disappeared beyond a curve.

A short time later the king-fisher appeared once again on the same lookout branch.

"So that he wouldn't get lonely by himself, I stuck a switch into the bank for my friend," Matvei went on. "Of course, there are lots of switches on the river, but it's not easy to find one that you can conveniently catch fish from. If you just stick a switch in the bank, even at a quiet, fishy spot, you might just leave your blue-winged friend hungry. It's no good for a bird to jump into the water from a thin switch: a thin switch gives a strong 'spring-back' that causes the hunter to misjudge in the water. A stiff switch is no good either: the blue sparrow is used to a small spring-back, so if there isn't any at all, he's got a misfire in the water again. So in other words, everything's gotta be in proportion ... and I scatter dry bread crumbs in the water for the small fry too."

It was then that I understood why the king-fisher always hunts from one and the same branches and what proportions and "spring-backs" the old fisherman, so adept at observing nature, was talking about.

The king-fisher frequents only those branches that are neither

too taut nor too springy—those that can serve as a good trampoline. Pushing off from such a trampoline, the bird reaches its catch with greater accuracy.

“Yes, I love the blue sparrow,” the fisherman said again. “Not like that striped chipmunk bandit: he just sits around waiting for a chance to steal some eatables and store them away in his burrow. There, hear them crying, ‘trum-trum’? Know why?

“ ’Cause of that bag of rusks I hung with a thin rope from a branch. Before that I left my camp for a day and the chipmunks smelled the rusks in the sack and gnawed a hole in it. They stuffed their fat little cheeks with rusk crumbs and hurried back to their homes. The sack had been packed tight, but when I returned, it was half empty: those striped robbers made off with plenty! Now look, some thirty of them have gathered around under the sack—they stare at it but they can’t get at it.”

Matvei fell quiet for a moment, listened, then went on:

“Some of them jumped and jumped, then ran away empty-handed, and now they’re crying, ‘trum-trum’. That’s how it is with them—if it thunders, someone fires a gun, or some other misfortune happens, the chipmunks get upset, sit down on stumps, bristle their fur, bury their heads in their paws and cry sadly, ‘trum-trum’... Now their trouble is that their free dinners have come to an end and they’ll have to find food for themselves again, foraging in the taiga.”

After a moment’s silence he asked the kids,

“Now, you’re all scholars, but can you tell me how you’d get a two-hundred-pound boulder inside a boat to keep it steady on the rapids? That’s the only place you’ll find sterlet, you know.”

He merely laughed at the youngsters’ replies, repeating over and over:

“And you’ll go right to the bottom!”

“How ’bout you, Manteifel? Could you do it?” he asked me. “You’ve been trained in everything after all.”

“I’ve never had the need to, but if I ever did, I could do it,” I answered. “A rock has no force in water and will easily go up if you tug it hard and don’t let it stop moving. Then it will jump out of the water on its own, by inertia. All that’s left is to flip it over the side of the boat, take to the oars at once and straighten the boat so it’s headed downstream.”

Matvei listened with a frightened face and asked in alarm, “Who taught you that?”

“Archimedes,” I replied.

“Where’s he live?”

“He died.”

“Was it just you he told or did he go and blab it to everyone? That’s a long-time secret in our family, handed down from my great-grandfather. So I’m the only one in the village who can catch sterlet in the river Kan.”

I told him that in his day Archimedes had written about it in a physics book (on specific gravity), but clearly it had not yet reached their village.

“When you leave the Kan for the Yenisei, don’t go telling anyone about that Archimedes, or there won’t be any sterlet left in the river! Who taught him?”

“He figured it out on his own,” I replied. The old man continued to sit by the campfire for some time and, shaking his head, kept repeating,

“Boy, that was some clever head that guy had!.. What’s that name again?”

“Archimedes,” the kids prompted.

When we said good-bye, the hunter grew sad.

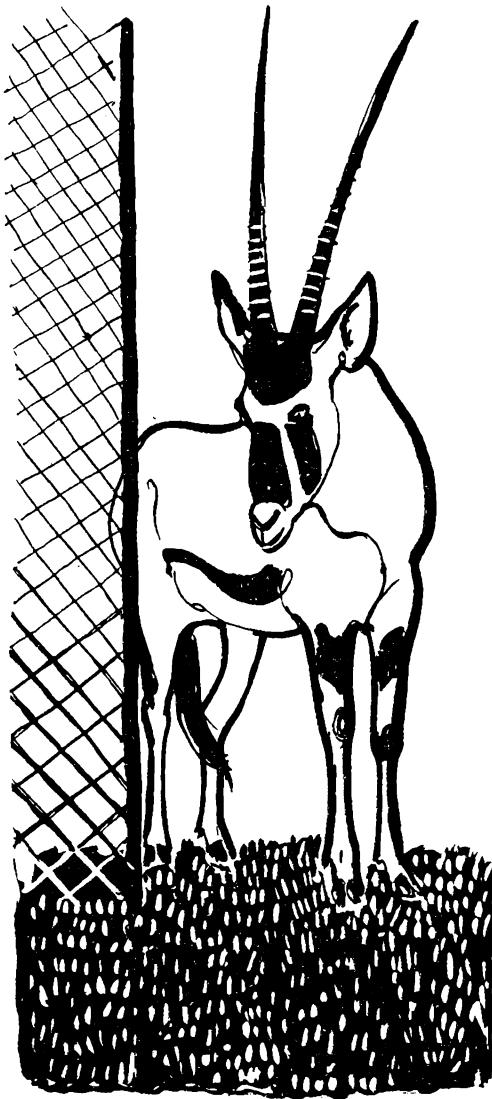
“I’ve never seen folks like you that would leave the city for the taiga ‘cause they wanted to. It’ll be mighty lonely out here by myself without you; and I didn’t use to feel like that either.”

And in fact, after two days he overtook and rejoined us.

## About the Reasoning Capacities of Animals

Who of us does not remember the fabulous adventures of the grey wolf, the sly fox or the shaggy bear? Influenced by such tales, many often overestimate animals' capabilities, ascribing to them such human traits as intelligence and reason. "Do animals have intelligence?" we are sometimes asked. How do we answer such a question? Of course, they do not have human intelligence; all their actions are motivated by reflexes that have developed under the complex conditions of life in the wild, in a process of adapting to these conditions.

Once, in order to measure the reasoning capacities of animals, we conducted the following interesting experiment at the Moscow Zoo. We placed a group of beisa antelope just brought from Africa in a large pen surrounded by a wire fence. The same type of fence divided the pen into two halves, one of which was oc-



cupied for a long time by our four-legged captives. At first they persistently tried to break through the barrier, but their efforts were in vain: the wire fence held fast. The antelope gradually grew accustomed to the fact that they could not go beyond the limits of the fence. Then we removed the internal barrier. Nothing happened: none of the animals dared cross the line along which the fence had extended; they did not have enough "reasoning capacity". The antelope would dash up to the line of the removed barrier and stop dead in their tracks. Far more sure than any fence, they were held back by a conditioned reflex developed in the preceding weeks: for no matter how they had tried then to go beyond the bounds of the pen, enclosed by a wire fence, their efforts were futile.

Similar experiments were conducted in the Ukrainian wildlife reserve Askaniya-Nova with deer, ostriches and llamas. There too none of the animals dared cross the line of the removed barrier for a long time.

The capabilities of animals are frequently overestimated even in our fur-breeding nurseries. In constructing dwellings for sables and martens, they often cover the ground entirely with wire mesh. This is done in order to keep the animals from digging underground passages and escaping. An unnecessary precaution! In the Moscow Zoo sables and martens lived in pens with earth floors and it never occurred to any of them to dig their way out. Of course, every one of these animals made attempts at escape, but they did not have the "reasoning capacity" to succeed in their endeavors. In trying to slip out of their cages, they would approach the wire mesh, run into it, and right there by the barrier begin digging. Having foreseen this, we had lain a board flat the length of the cage and covered it with a thin layer of earth. The sables and martens could merely scratch the board in vain, though were it to occur to them to back away from the fence just twenty centimeters nothing would have

stopped them from digging a short underground passage under the board to freedom.

Lions and tigers are possessed of no greater "reasoning capacities". In parks they are often separated from one another by light plywood partitions that would crumble at the first blow of their powerful paws. But it usually does not occur to the great predators, raised in enclosures with strong walls,

to destroy this flimsy barrier. By getting an animal accustomed to sitting in a cage, we instill in it a new habit that does not allow any attempts to quit its permanent dwelling. These reflexes are developed so thoroughly that it is sometimes impossible, even by force, to make an animal exit through an open door if it has never left through it before.

The spotted deer is well known as an excellent jumper. However, there has yet to be an incident of any of our deer trying to escape by leaping over the relatively low barrier of its enclosure. The same is true of the Kopet-Dag wild goat. It lived quietly and modestly for several years in its enclosure. But it so happened that one night a dog got into the zoo and attacked the Kopet-Dag home-body; then the goat easily cleared the fence that separated its pen from the remaining territory of the zoo. In this instance the unconditioned reflex proved stronger than the acquired one.

Discounting the monkey, the brown bear deserves recognition as having more ingenuity than any other animal. Neither the lion, nor the tiger, nor the leopard would ever guess to escape



to freedom through a rising door, though it may be very simple to raise it. But the bear has only to see how the zookeeper raises the door and he'll be doing just the same! On the other hand, a bear does not have the reasoning power to lend its back as a stepladder for another to climb out of a mote to freedom, while even a three-year-old child would figure this out!

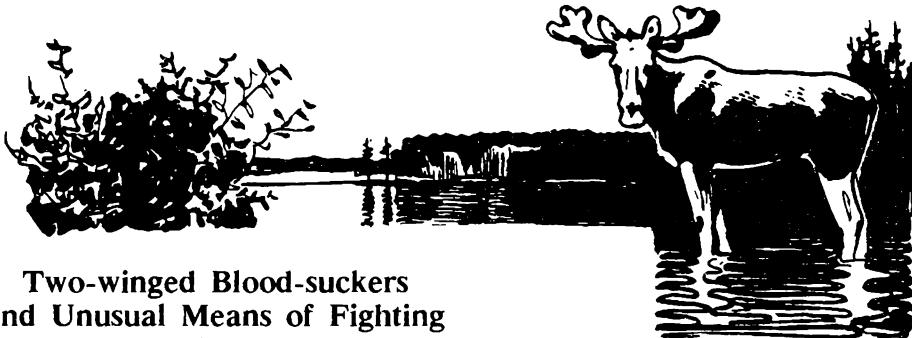
One spring during a thaw, Borets ("fighter"), our huge bear, began packing snow with his great paws and pushing the big heaps of snow into the mote. Then he stood up on his hind legs and stretched his forepaws to the edge of the mote, as if measuring: wasn't it about time he climbed out to freedom? The situation became threatening. Someone issued the command, "Bombs!.."

The park employees ran to the warehouse and returned a couple minutes later with bombs. These were special shells that endanger the lives of neither human nor animal, but which explode with a deafening roar.

The bombs exploded at the place where Borets had fashioned his little hill. The explosions terrified the shaggy giant, who left the mote in a hurry. For some time afterwards he did not approach it and made no further attempts at escape. But it was not long before he surprised the employees at the zoo once again. The bear's eyes happened to fall on a green switch which hung lower from the tree than the others and swayed gently in the wind. Borets tried for some time to reach the branch directly from the ground, but was just a bit short. Then he dragged up a large rock, stood on it and, seizing with his forepaws the fat branch out of which grew the intriguing green switch, easily snapped it off. Not all other bears could have performed this stunt.

A curious incident took place in the zoological gardens in Tbilisi (Georgia). An employee, in whose responsibility lay the care of a group of tame bears, happened to forget his keys to the pen one day. Not wishing to go back to the office for them, he

reached the bears by climbing over the stone wall that enclosed the pen on the sides and back. Between the rocks were cracks which he used as footholds in descending the wall. The bears ate the bread thrown to them and watched their caretaker tidy their pen, but when the man had finished and climbed back over the wall into the garden, the bears climbed up the same way and escaped to freedom. What a chore it was then to drive four bears back in again! After this incident the wall had to be carefully smoothed over with cement. These facts point to the bear's great capacity for imitation.



## Two-winged Blood-suckers and Unusual Means of Fighting Them

Toward the close of the warm June day the herd was heading back home. Shaking their heads, the cows drove off the mosquitos and horse-flies that had chased them from the forest. The cowherd could barely restrain the forward-most animals, rushing to escape their tormentors. Watching these sufferers, I recalled encounters with animals in the wild, whose lives seemed to be made unbearable by these parasites that suck blood, cause burning pain and spread infectious diseases besides. However, this only appeared to be the case. I recalled the following incident.

Once, making my way through dense reeds at the delta of the Amu Darya river, I came out at last at the edge of a large clearing and saw a large boar standing motionless a few dozen meters away. In tenfold binoculars I could see that it had closed its eyes and was dozing, while great reed warblers and other insectivorous birds were hopping about its back and fluttering in the air.

They dexterously snatched up the horse-flies and large mosquitos in flight, before the latter had a chance to alight on the vulnerable spots of the boar's hide. When their beaks were full, the birds would rush back to their ravenous nestlings and immediately return for more. Meanwhile the boar basked in the warm rays of the evening sun, protected from his tormentors by his

feathered friends. The mutual advantages of this arrangement are obvious.

At the Losiny Ostrov (Moose Island) forest base of the Moscow fur-breeding institute, third-year students were undergoing a summer training session. Two broods of half-grown ducklings always gathered around the open-air canteen at lunch time, looking for hand-outs. Nine sheep which had been grazing in the forest, pestered on this warm day by horse-flies and mosquitos, moved rapidly toward the complex and plopped down on the lawn before the canteen, lying motionless on the ground like mannequins. Running to meet them, their down-covered wings outspread, were the ducklings. They hopped right up onto the sides and heads of the tormented animals. Hot on the sheep's trail flew the blood-suckers, but rare was the one that succeeded in landing on the heavily breathing animals: turning their long necks, with perfect accuracy the ducklings caught in their flat beaks the large horse-flies and mosquitos as they selected a landing site. Soon all the blood-suckers had been caught, and the ducklings turned their attention once again to the lunchers. The most amazing part of all was the speed with which the new conditional reflex was worked out in both the sheep and the ducklings. There seemed to be a silent agreement between them, one in which they both had vested interests. Under ordinary circumstances ducks do not jump on the backs of hooved animals as do, for example, starlings, ravens and jackdaws.

Over the course of centuries moose developed their own peculiar form of defense against blood-suckers. By winter all their sweat glands disappear. This helps in the retention of warmth, since the moose's thick hide does not dampen from sweat even in swift flight from enemies, and the dry skin retains its qualities as a poor conductor of heat. Northern deer do not sweat in winter or summer. Both animals keep from overheating by sticking out their

tongues while running, opening their mouths, taking bites of snow and breathing in short breaths. By summer the northern deer retreat to open highlands, where the wind blows the blood-suckers away, while the moose, remaining in the forest, has another means of self-preservation. With the onset of the spring shedding season, their sweat glands are restored, and the moose's hide becomes damp with a brown fatty sweat. Giant mosquitos and even horse-flies avoid landing on it, to say nothing of smaller insects. The blood-suckers die upon contact with the fatty sweat, as it clogs their respiratory pores. The only vulnerable spots left on the moose's body are the ankle joints of the forelegs, the knees of the hind legs and the ears. The legs in these spots are often bitten by blood-suckers till they turn into massive bloody sores. In order to save itself from the bites, the moose is forced to stand in water over its knees for long periods, frequently dunking its head as well and flapping its long ears.

On more than one occasion blood-suckers have been the cause of natural disasters. Once a swarm of mosquitos, carried by a rising current of warm air or a cyclone from goodness knows where, descended on Askaniya-Nova. The bites of these mosquitos cause a burning itch and often sores. For two or three days people stayed indoors with the windows closed, not venturing outside at all. During that period baby storks and many other baby birds died in their nests, bitten by the dangerous insects that penetrated everywhere, even through fine mosquito netting. After a few days the mosquitos disappeared, but not without having brought harm to many mammals and even adult birds.

Particularly bothersome are the mosquitos in the region around Tashkent, where bites have caused dangerous sores on the skin of humans. The Institute of Parasitology, headed by Y.N. Pavlovsky, established that these insects pass the winter in the burrows of gerbils and other mouse-like creatures. The researchers

at the institute conducted clever experiments to prove that the mosquitos fly far away from their place of hibernation in the spring, making their way even to large cities. After this a difficult task was carried out: all the gerbils within a large radius of the city were poisoned, their burrows filled; in this way they eliminated the mosquitos that had tormented humans for hundreds of years.

## The Story of One Bear Family

The male bear cannot stand to have newborn cubs around him. Therefore the she-bear takes the bear cubs in spring and goes away to places where there are no males, then come fall she goes into hibernation along with her partially grown young for the whole winter in a den (bears reproduce once in two years).

Several years ago we decided to try to accustom the father bear to the bear cubs.



The enormous bear of the Moscow Zoo, Borets, was brought to live in one pen with the she-bear Plaksa ("cry-baby"). That winter Plaksa gave birth to three cubs. Borets looked askance at them and tried on more than one occasion to get at the cubs. But mother was always on the alert. The father had only to move close and Plaksa would quickly charge forward, guarding her still blind young with her own body. Borets was twice as big and twice as strong as Plaksa. But the mother bear was

awesome in her anger. She would lunge at the he-bear in a fury and shower him with such blows that he would seek a hasty retreat. Dodging the she-bear's swipes, he would back away on his hind legs, painstakingly covering his head with his forepaws. Once as he was backing away from the advancing she-bear, he tumbled into the mote.

Such "family scenes" continued day after day until Borets resigned himself to the necessity of tolerating the growing cubs around him. Plaksa had so terrified him that Borets even developed a particular reflex: when the bear cubs crawled out of the den and approached their father he would run headlong away from them, glancing fearfully at their strong-willed mother, first covering his head with his great paws.

We thought that Borets had reconciled himself to his new familial status once and for all, but this proved not to be the case.

In the middle of the pen where the bear family lived protruded a rather tall stump about two girths around. One of the bear cubs climbed up on it one day and sat there, basking in the sun. Plaksa was dozing. Borets crept up softly to the stump and hit it so hard with his paw that the cub went flying several meters through the air with a yelp. The she-bear awoke instantaneously. She served up the giant father a couple of good whacks, and the beast, settling down at once, headed guiltily for his corner to sleep.

Peace reigned in the family for several days. Plaksa was already beginning to lose her ordinary caution. One quiet sunny morning she dozed off like before. In the meantime one of the cubs climbed down into the mote and began splashing its paws in the water. Borets watched him carefully, then slipped stealthily into the mote from the other end, and, moving quietly through the water, approached the cub. Unaware of his dangerous neighbor, the youngling went right on splashing playfully. All at once Borets

snatched the cub up in his teeth and quickly submerged it deep under water. At the first futile attempt to cry out, the cub began to choke. But soon Borets too could no longer breathe and was forced to pull his head out of the water for air, however without releasing his victim from his clenches. At that instant the cub's desperate cry rang out across the "Island of Animals" (the part of the Moscow Zoo on the new territory where the bears were kept). The mother quit her dozing in a hurry! Plaksa was across the large clearing in two bounds, reaching the treacherous father in an instant.

What happened then! The she-bear fell on Borets in a frenzy, giving him no chance to catch his breath. Showered with terrible blows, the bear merely sheltered himself with his paws and retreated to the far corner of the pool in a cloud of spray. Utterly terrified, he remained sitting in the water for more than an hour. All this time Borets listened fearfully to his excited spouse pacing up above.

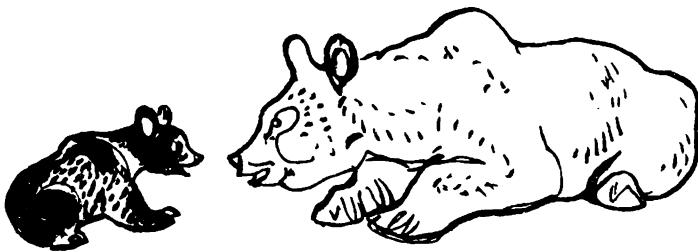
From that time on order was established for good in the bear family. Busy with feeding and raising her cubs, Plaksa paid the he-bear no attention whatever.

Borets shed and lost interest in his offspring. Now he was sleeping most of the time, stretched out on his back with his paws outspread.

Winter crept up unnoticeably. The bears dug deep lairs for themselves and spent most of their time dozing in them. Plaksa slept with her three cubs, Borets in a separate den on the opposite side of the pen. On warm days the cubs would crawl out of the lair to play in the snow. Sometimes they would boldly approach their father, and Borets would then try to cut off their path of retreat back to their mother's den. In the winter Plaksa's maternal instincts waned, and she would defend her cubs only when they were inside the den. But the semi-grown offspring had already

attained independence; it grew much harder to catch the cubs. Nonetheless, Borets succeeded once in catching one of the cubs. Pops gave his seventy-pound kid a whack that sent it flying several meters.

The next spring there were no serious misunderstandings in the bear family. The cubs had grown considerably and were now far bolder in their dealings with their father. One day as I was strolling around the park I noticed that a crowd gathered around the bear family's enclosure was noisily expressing its delight. As it turned out, a truly interesting scene was being played out in the pen just then. Borets had gone down into the mote, and one of the cubs—the one who had recently been whacked by his father—was following him up above. The bear was trying to climb up the wall and out of the mote. He rose on his hind legs, caught hold of the stone ledge with his claws and strained to pull himself up. At that moment the bear cub approached him; it gave its father three slaps and dashed headlong back to the cover of its mother...



## For Lack of Training

Several charges of the Moscow Zoo—blackcocks, hares and song birds—spent their youth in small cages. We observed their growth continuously, and nothing in their development seemed

to incite alarm: the young grew normally and were properly fed; only the movements of these animals were limited by the size of their cages.



The young gradually reached maturity, enabling us to complete our experiment. The goal of the experiment was to determine how the size of an enclosure affects the development of a young animal. We began with the hare. It was released from the small, cramped cage in which it had grown up onto a large lawn. The little hare crouched down and looked around. The sun shone blindingly. Flowers spotted the bright lawn. An endless expanse spread out in all directions. The hare took a sudden leap, then another and another. It seemed to be growing friskier with every second. Then it tensed its hind legs once more, leaped into the air—and fell down motionless. We

moved closer. What had happened? The little hare was dead. It had died of a heart attack, as an autopsy later revealed.

The blackcock too grew up in a small cage. It had never flown in its life: its enclosure was too cramped.

On the ninety-first day of its life long black feathers appeared in the blackcock's tail, and it became a comely dark bird indistinguishable in color from an adult blackcock. Come spring the bird was released into an expansive enclosure occupied by grey-hens. This was the blackcock's first and last day in the vast open-air cage. The liberated captive, its tail spread, began to sing and "warble" its wedding song. Then it began spinning in a mating dance, but all at once fell over on its back, lapsed into seizures and soon grew quiet. Death, as an autopsy later revealed, had been caused by a rupture of the aorta.

The nightingale, raised in a tiny cage, died in the same way. With the first real trill the nightingale tumbled dead from its perch: it had heavy internal hemorrhaging.

What do these experiments tell us?

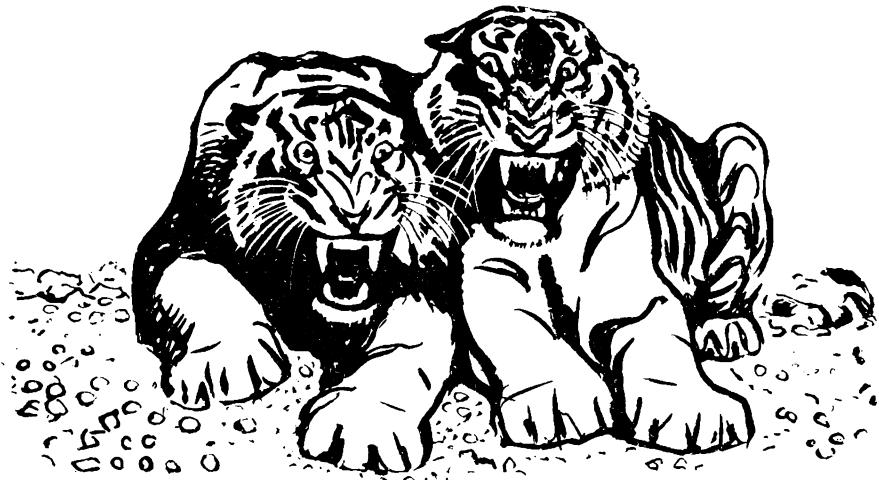
That without flying, jumping and other exercise—usual in the wild—the internal organs of animals are not adequately trained. The walls of the heart and arteries do not attain the necessary strength, they have too little elasticity, and they cannot withstand increased blood pressure. Even in the wild it is not uncommon for young birds who have just left the nest to die of heart attacks and internal hemorrhaging. This generally happens when the birds must flee from hawks or other predators. I once heard a story about how several young starlings fell dead from a flock being pursued by a hobby. Young swans have been known to fall dead on many an occasion when, frightened by the sudden gunshot of a hunter, they began flapping their wings quickly to gain altitude.

Hares in particular suffer from a sedentary way of life. The

muscles of their hind legs prove too powerful in comparison to the capacities of the blood-pumping apparatus, while the poorly developed bones often break if the hare is given the chance to run quickly around a pen. Even for adult hares, 22-25 days in a cramped cage is enough for the hind legs of some to break while running, as was observed during the release of grey hares in Siberia.

There was one incident when a white hare, brought not long prior to that by a hunter, escaped from its pen. It jumped over the mote and found itself in the enclosure of the brown bear Borets. The bear started after the hare at a gallop, but the latter dodged him with surprising agility, and, try as he might, Borets could not catch it. Having slipped away from its pursuer, the swift white hare made a two-meter leap, jumped onto the ledge of an adjacent wall and hid there in a niche, crouching close to the rocks. The bear lost sight of the white hare. He looked over every nook, then rose on his hind legs and began sniffing. Twitching his nose, he carefully investigated all the uneven spots in the wall, and finally discovered the hare through his sense of smell. The furry pursuer approached the wall cautiously, its forepaws outspread, but the white hare surprised the bear by leaping onto his head. Borets, in an effort to catch the hare, lost his balance and fell flat on his back, hitting his head on a rock. But the chase went on. For another two hours or so the bear continued racing around the entire pen, and it was only with a lucky swipe that he finally chanced to kill the deft jumper.

This pursuit cost the great beast dearly: his lack of training left him so exhausted that for two days he refused to eat, lying on his back and groaning at the slightest move. No doubt his muscles, grown unaccustomed to stress during his years in the zoo, were in great pain.



### **The Brave and the Cowardly**

Basing our conceptions of animals on sayings, fairy tales and fables, many of us have grown accustomed to thinking that lions and tigers are very brave, donkeys are stupid, pigs are slovenly and rabbits are cowardly. However, by no means are these common opinions always correct.

At the new territory of the Moscow Zoo a baby goat somehow found its way into the pen of the Manchurian tigers. These huge beasts had never before laid eyes on a kid. Seeing the kid approaching them boldly, the tigers assumed defensive positions. Searching for its mother, the kid trustingly drew near to the powerful predators. The latter, snarling and baring their teeth, backed away from it. Pressed against the wall, the striped beasts reared and with a roar began slashing their paws, panic-stricken by the kid. A random blow dealt by one of the beasts killed the kid.

Even after this the tigers circled timidly, sniffing but not daring to approach the small lifeless body. Such is the famed bravery of tigers! And yet, every morning at feeding time, the

tigers lay back their ears, creep up to the horse and, preparing to spring, stop just before the mote over which they cannot leap.

Many a time it has surprised visitors at the zoo to see a gold-fish bravely swimming in an aquarium alongside a voracious pike. However, the explanation here lies not in the little fish's bravery, but in the fact that in the wild the toothy pike usually feeds on fish with silvery scales: a gold fish is not familiar to it, and the pike will not touch it for a long time. It is very rare that a river pike will attack a pond crucian, which it rarely encounters in river waters.

The huge, eight-meter royal python which inhabits the Moscow Zoo usually feeds on white piglets, and in its many years of captivity it has grown accustomed to their color. It will immediately squeeze the piglet to death, encircling it in the powerful rings of its body, then swallow the animal whole, beginning with the snout. However, if a spotted piglet is put into the huge snake's cage, the coloring of which is unfamiliar to the python, it will not only not touch the animal but will even curl up in rings, assuming a defensive pose.

Once in the dense forests of the Lapland Reserve, a brown bear jumped out of the bushes suddenly and attacked a game-keeper. Defending its catch—a moose it had just killed—the beast knocked the man on his back and sank its teeth firmly into his leg. The man sprawled in the snow managed to cock his gun and tried to shoot the animal. But the gun misfired. Nevertheless, the bear jumped aside: it was frightened by the unfamiliar metallic sound of the released trigger. A shot from the left barrel badly wounded the bear, who quickly retreated.

Participants in a film expedition to Africa told of their encounters with lions. If the wind was blowing away from the lions who were lying in the grass and in



the direction of the expedition vehicle, the animals would permit the people to get very close. However, the wind had only to change directions and the lions, picking up the scent of humans, would take to their heels. This incident confirms that lions, like many other animals, are guided more by their sense of smell than by sight.

Now for the donkey, whose stupidity is acclaimed in a saying. Let us see just how stupid it is. The incident described below raises some doubts.

Like the majority of domestic animals, the donkey swings its tail and shakes when it is bothered by mosquitos, horse-flies and other blood-suckers. Once I occasioned to observe the following scene in Central Asia. A mischievous boy took from its dog a louse fly and placed it on the donkey. Feeling this tenacious insect on its hide, the donkey began rolling on the ground, as though trying to crush the hard flat fly tormenting it. The boy did not abate; he found another fly of the same type and began creeping up to the donkey in order to put it on the animal's back as he had done before. The donkey glanced sidelong at the fly, darted swiftly up to the boy and with the hooves of its hind legs sent him sailing into the gutter. A maneuver like this is not performed out of stupidity!

“Cowardly as a rabbit,” the saying goes. But in fact, the rabbit is sooner brave. Many do not realize that the hind legs save the swift rabbit in its fight for survival. If rabbits were not able to run as quickly as they do, they would have been wiped out long ago by various predators. The rabbit's speed is its principal form of self-defense. But the rabbit never runs just for the sake of it. It demonstrates record speeds only in extreme cases, usually conserving its strength. From a slower pursuit hound the rabbit runs unhurriedly, turning around and glancing back at the dog. It is another matter when it is pursued by a Russian wolfhound,

whose speed equals or surpasses the rabbit's. In such cases the grey rabbit reaches top speed and, even when it has escaped the dog, will continue running for another two or three kilometers. But nevertheless, this is not cowardice: a frightened rabbit has no other means of saving itself from predators.

At the Askaniya-Nova reserve I once watched a young horse walking slowly across the steppe with its head lowered, sniffing. All of a sudden a grey rabbit rose up angrily right at the horse's face and scratched the young mare with its forepaws. The horse scurried aside, while the rabbit curled back up on the same spot. Another time I had the opportunity to observe as three grey rabbits, fleeing from a dog ran into a herd of sheep, and without the slightest fear they scampered into its center, saving themselves from further pursuit.

But a rabbit does not always run from a dog. On a moonlit winter night one can occasionally see a rabbit calmly nibbling cabbage-stumps in a garden while the very same dog that chased it relentlessly that day barks at it from the doghouse where it is chained.

More than one hunter has experienced the force of a rabbit's paws when carelessly taking a wounded rabbit by the ears; quite often rabbits have inflicted serious wounds on hunters with the sharp claws of their hind legs. .

Many a predatory bird has become the victim of a rabbit defending its life. Several hunters have watched the rabbit, fighting off a golden eagle, fall on its back and with a thrust of its strong hind legs spill the innards of the huge feathered predator.

No doubt many have seen how some dogs will go out of their way to avoid chickens. This means that at some point in its youth the dog was the victim of an enraged broody hen defending its young. Oddly enough, even a chicken can instill life-long fear in a stronger animal.

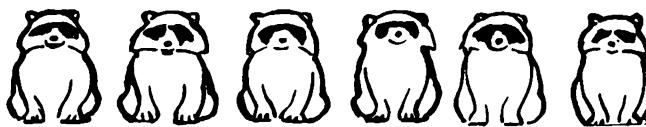
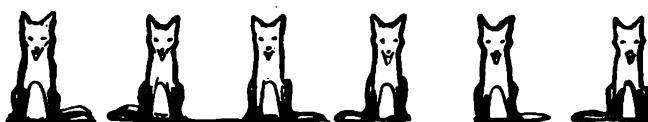
Yet another interesting example with a gay little bird—the isabelline wheatear, which inhabits our southern steppes. Wheatears nest in the old, abandoned burrows of gophers. After having left the nests of their parents, gophers will often return as adults and try to reoccupy them. This is when the conflicts arise. The little bird will fearlessly charge its enemy should the latter approach its nest, and will even leap onto the gopher's back, peck its ears and ride it “horseback” around the steppe. After a few tangles like this the young gopher will stop approaching burrows if it sees any wheatears in the vicinity.

Mention should also be made of the African ostrich, known in fables to hide its head in the sand in fear. This enormous bird can be terrifying indeed when it comes upon an enemy. A blow from an ostrich's foot is more powerful than one from a horse's hooves. But the ostrich will immediately retreat if you raise a hat on a stick, for example; it only attacks those shorter than itself.

This tale of the undeserved reputations of some animals will not be complete without mention of the “slovenly” pig. We have full grounds to assert that the pig is one of the cleanliest of animals. In farms where pigs are well tended these animals maintain their pens in good order and will always arrange their bathrooms in the farthest, most secluded corner. In hot weather pigs will look for a place to bathe, and it is not their fault if they encounter on their way not baths, but mud puddles.

## Friendship Among Animals

In the Moscow Zoo, in one expansive, enclosed glade a large group of animals lived together. This group was somewhat out of the ordinary: two wolves, a brown bear, three badgers, six raccoon-dogs and the same number of foxes.



They were brought to live together in their youth.

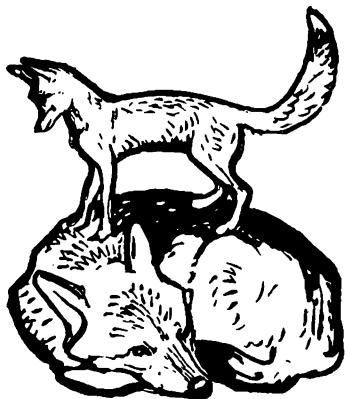
“What are you doing?” several of the visitors would ask. “Your animals will grow up and the stronger are sure to make short work of the weaker. Nature will take its toll!”

Two years passed, the animals matured, and nature was still not “taking its toll”! No one in the group feared anyone else, with the exception of a red Ferghana Valley wolf who “groveled” before the others. In spite of its large size and solid build, this wolf always glanced from side to side and courteously yielded to even the small foxes. The animals, on their part, were not fond of this toady.

By some silent agreement, the whole group obeyed a strict and commanding she-wolf by the name of Dikta. However, she had few worries, for peace was rarely disrupted. The group received common feed and always

all together; but even meals proved a peaceful event. Occasionally the she-wolf Dikta alone would bare her big white fangs at the feeding site, and the stubborn bear Mishka the Timid would back away at once. It would happen on occasion that the greedy she-foxes would take the biggest pieces, then the wolves would use their noses to knock the food out of their teeth.

The badgers behaved the most independently of all. They were hail-fellow-well-met even with the bear.



Infrequent disputes were always ended quickly, inasmuch as Dikta was sure to get up and disperse the squabblers.

It was in vain that excitement-seekers would stand by the glade for hours waiting for a brawl to break out. The intertribal inhabitants of the glade never knew a state of war. Order in such an unusual community can be explained by the fact that the animals had grown accustomed to one another at an early age, and in their youth, when bites were not dangerous, each one of them developed a set of conditional reflexes that kept them from overstepping those bounds in animal relations beyond which serious conflicts could ensue. The fox, for instance, who grew up with the wolf cubs, would never look at meat a wolf was eating:

in passing by, it would always turn away. But when the animal is sated and has curled up in the snow, the fox will jump onto it and sleep there, as if upon a warm sofa.

This experiment in the communal upbringing of animals serves as a graphic demonstration of how man can change the inter-relations of animals to differ radically from those observed in the wild by influencing the animals' behavior.

## The Calendar and Animals From Foreign Lands

The weather was lovely and dry. The sun shone blindingly and it was hot even in the shady green alleys. But the zoo's huge python, brought to Moscow from India, was behaving as if it were winter. The snake noticeably lost its liveliness; even the piglet put in its pen remained untouched. The python lay motionless under a stone ledge: it seemed to have sought refuge there from the cold rains that pour down at this time in its homeland, in India.

Meanwhile, in winter, when grey clouds hang low and drop fluffy snowflakes, the zoo's Australian emus begin to reproduce. They are unbothered by the fact that the whole park is covered with snowdrifts—at this time in Australia spring is already in full swing!

In October and November yet another Australian bird begins to reproduce—the black swan. A visitor to the zoo during these months can see the snowspeckled black beauty sitting on a nest laboriously woven from sedge. In the nest of a swan lie five eggs. They are incubated in turn by the male and the female.

Such a seemingly unexpected peculiarity as reproduction in winter is passed on genetically and is inherent in several types of animals transported from their homeland to other latitudes. And when the zoo's foreign inmates continue to live by the

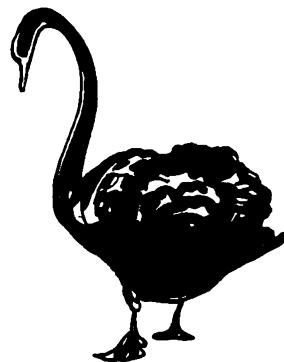


“calendar” of their homeland even after several years, we say that their biological rhythms are at work, that is, the vital peculiarities of a given animal, developed over the course of centuries under the influence of the conditions of existence in a natural environment repeat themselves for a certain period of time.

What is the reason for this irrationality in the behavior of black swans in the zoo? It lies in the hereditary seasonality of physiological processes that were worked out and consolidated through natural selection as valuable in the life of these birds in the wild.

One must not think, however, that nothing can be changed here. Once back in 1936 we conducted the following experiment on black swans. We prevented them from building their nests until spring, continuously foiling their attempts to do so earlier. Come spring we left the swans alone--and then they lay their eggs.

In ensuing years the offspring of the black swans, having become adults, did not begin the business of reproduction until closer to spring.



## An Intertribal Family

It so happened once that four tiny blind ferrets were brought to the zoo. We put them under the care of a house cat who had recently had a litter of kittens.

Some junior biologists at the zoo, knowing that animals rely far more on their sense of smell than on sight, took a basin of water and bathed all the kittens in it; then they soaked the ferrets in the same water. After this they took all the animals together—kittens and ferrets—and laid them at the cat's side. The latter was apprehensive at first, but because the ferrets smelled of kitten after their bath, the cat accepted the foundlings and took to licking them no less laboriously than the kittens.

The days passed. The foster-children grew and played with the kittens under the constant surveillance of their solicitous stepmother.

Thus the zoo came to have four perfectly domesticated ferrets. They never ventured far from their enclosure, though at the sight of strangers they would always hiss and seek refuge. On the other hand, the ferrets would respond immediately to the call of many of the young naturalists at the zoo, and were particularly affectionate with them. If the cat brought a mouse and summoned her offspring to "dinner" with a quiet mewing, the ferrets would always be the first to arrive and take possession of the catch.

One day a fox slipped out of its pen and started making its way toward the tamed ferrets at play. Who knows how the hunt would have ended had not the cat come to the rescue of her foster-children in time. Back arched, she lunged self-confidently and stood threateningly before the fox, guarding the ferrets.

A short time later we were given an opportunity to conduct another interesting experiment. While excavating a rat's burrow,

some junior biologists came across a nest and nine blind little rats asleep in it.

We took one of the rats and brought it to another cat who had also recently had kittens. The cat was instantly on her guard and got ready to snatch the rat up in her teeth. It had to be taken back at once.

Just as in the previous instance, we bathed the kittens and the nine rats in the same water. Then we put them all near the cat. The cat set about washing not only her own young, but the baby rats as well, for after the bath they too smelled like kittens.



The cat accepted the hairless foundlings in spite of the fact that they were but half the size of the calico kittens. An animal will always trust its nose before its eyes.

Visitors to the zoo continuously thronged around the cage in which this very unusual family lived, and many predicted that the cat would soon "come to her senses" and eat her foster-children at last. One old woman walked up to the cage, took a look and waved her hand in disgust:

"Oh lordy! What they've brought that cat down to!.."

We could not have agreed less with the old woman's opinion;

on the contrary, we were very pleased with the success of the experiment.

The rats grew up; they experienced no uneasiness whatever in the company of their stepmother and her kittens. True, only five of the nine survived, but then, these five were the strongest, hardest and most fit for life. Those who were weaker and whose mouths were not big enough to take the cat's nipple were the ones to die.

The cat made no differentiation between the kittens and the foster-children—she cared for all of them equally. When the rats would wander far away from her, the cat would take them gingerly in her mouth and drag them back to the basket.

In time the rats grew into adults: they continued to live in harmonious community with their stepmother cat, who would fall on her back and play with them.

A cat's maternal instincts are boundless. I once received a letter from the wife of a railroad worker, Mrs. Vaneyeva. She told an interesting story about the upbringing of chicks by a cat.

Due to unfortunate circumstance the chicks were orphaned immediately after hatching. And at this age, in addition to food, they require warmth.

This is exactly what they received from the cat's body whenever they got chilly.

Mrs. Vaneyeva placed the five just-hatched chicks in a box along with the cat and her kittens. Contrary to her expectations, Murka the cat treated the chicks with touching solicitousness, licking them gently whenever they peeped.

Of all the chicks only one rooster survived. He had a true friendship with the kittens, while the cat, who often brought her kittens sparrows or other small birds, never threatened the life of her foster-child.

Another letter from a small village in the Urals told an even more curious tale.

On a shelf above the stove, in a hat which served as an incubator of sorts, some children managed to hatch three chicks from eggs. One of them got the idea to give the chicks over to be raised by the household cat Smokey, who had recently had a litter of kittens. During the day, in the cat's presence, the chicks were laid alongside the kittens. Smokey quickly sniffed the little yellow balls peeping so piteously, and tried to snatch up one of the chicks in her teeth. But the children spanked the cat, and the latter quickly reconciled herself to the unusual company.

The first day the chicks remained by the cat under the children's surveillance for about two hours, the second day longer. On the third day they left the chicks with the cat overnight. This experiment proved entirely successful.

In this way three weeks passed. The chicks slept soundly among the kittens, while the cat licked them painstakingly, just as she did her own young. However, in the fourth week two of the chicks were found dead: Smokey had accidentally smothered them when she stretched out carelessly in the basket.

When the children found the dead chicks in the morning, they threw them away behind the barn, but the cat soon found her dead charges and began sniffing them and turning them over from one side to the other; she would leave, then come back again, as if inviting them to follow her. In order to put an end to the cat's agitation, Smokey's stepchildren had to be buried in the ground.

And so, one chick remained. It lived side by side with the cat for about two months, until all the kittens were given away. But even then their friendship did not come to an end.

## Kaskyr and Kaskyrka

Two young wolves were brought to the Moscow Zoo. They were brother and sister, and their names were Kaskyr and Kaskyrka, which means “he-wolf” and “she-wolf” in the Kazakh language. They had been brought from the desert of Bolshiye Barsuki (“Big Badgers”), which spread to the north from the Aral Sea.

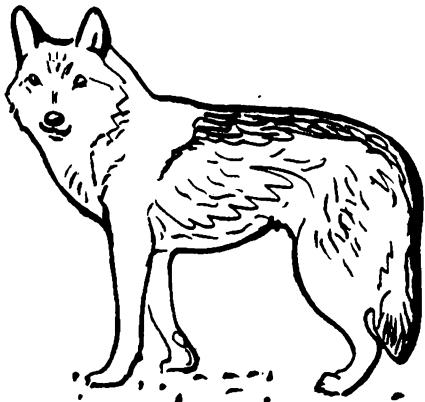
There had been many wolves in the zoo’s cages, and each had differed significantly from the next; some were easily tamed, though they had been captured as adults; others demonstrated the wildness of a beast of prey from early childhood. Kaskyr and Kaskyrka for their part behaved peacefully at all times and became completely tamed very quickly.

Soon I began taking them to lectures—to workers’ clubs, army units and schools. Within a short time both animals had adapted themselves to the role of live exhibits, would hop into the car eagerly and sit obediently on the table before the lecturer, keeping close watch on both him and his audience.

At one large lecture in the zoo’s main auditorium, I spoke on the origin of the dog, while Kaskyr and Kaskyrka sat off stage waiting for their turn to come to the podium. When the time came to demonstrate the she-wolf, she was not in her place. Having grown bored sitting in isolation, she had slipped out of her collar and disappeared.

We were afraid of trouble, for the zoo was packed with people just then. But Kaskyrka was very peacefully disposed. She trotted calmly through the park among the visitors and headed





straight for her cage. This is precisely where we found the runaway. She was sitting right by the door waiting to be let inside.

On another occasion Kaskyrka gave us an even greater fright, having fled from a lecture in Zamoskvorechye [an area of Moscow on the opposite side of the Moskva river from the zoo—*Tr.*] But this time too

our fears were groundless. Running along the streets of Moscow, the wolf found her way home, though she had been delivered to the lecture in a closed vehicle. Once again she came to her cage, having bothered no one.

It was clear that no one on the street had paid any attention to the wolf, and whoever had noticed her most likely mistook her for a large shepherd.

Kaskyr and Kaskyrka were extraordinarily affectionate with the people they knew well. When we tried staging an “attack” on some people who enjoyed the wolves favor, the latter instantly became mean and vicious.

Without any kind of warning the wolves tried to seize the “offender”. The wolves did not forget these play “enemies” for a long time, and the “attackers” had only to appear later near the cage for the wolves to begin growling at them and tearing at the metal bars.

In time Kaskyr and Kaskyrka became big, hardened wolves. And still it was possible to walk freely with them in the country without a leash. Contrary to the Russian saying “Feed a wolf as you will, but it will always look to the woods,” Kaskyr and

Kaskyrka did not strive to escape from captivity.

Studying the life and ways of wolves, one cannot but conclude that these animals must at one time—approximately twenty thousand years ago—have served man as the initial material for taming and domestication out of which subsequently developed the many breeds of domestic dogs we know today.

Whoever had frequent occasion to observe wolves in the zoo may note that, despite their common external attributes, they differ greatly from one another in many ways. In the distant past, differences of this kind allowed people to conduct on a broad scale the artificial selection of hereditary alterations that gave rise to such a wide variety of breeds of dogs. What's more, the common wolf itself could be trained for use as a draught animal in harnesses. In work in the Far North, no dogs could compare to these animals, since they are weaker and less rugged than wolves.

The dog—man's best friend—came from trained and domesticated wolves. In this fact we see the beneficial role played by wolves in the past.

## The Mad Seal

An unusual incident took place once not far from Derbent, on the coast of the Caspian Sea. Here is what one of the local scientists told me about it.

A man decided to cool off in the sea. But since he was unable to swim, before entering the water he carefully inflated the inner tube of a car tire. Thus equipped, he could be fearless of drowning: the inner tube easily kept a man afloat on the sea's surface.

Suddenly from the depths of the water emerged a Caspian seal and viciously attacked the bather. The latter fought back desperately with his fists and, even more than his own body, sought to protect the rubber inner tube from the seal's teeth.

"Help!.. Save me!.." sounded his cries across the water.

Some fishermen who chanced to be in a boat not far from the scene of the incident responded quickly to the man's cries for help. They arrived just in time to see the seal sink its teeth into the tautly inflated rubber tube. The luckless bather would undoubtedly have sunk to the bottom had the fishermen not been there to pull him into the boat. The victim's legs were badly bitten, blood streaming from the wounds.

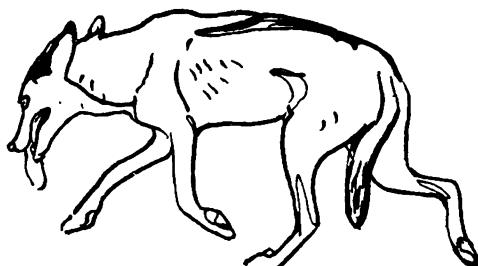


In saving the man, one of the fishermen whacked the killer seal with an oar. The animal dived, but later appeared again on the surface not far from shore and threw itself onto the beach. There it was finished off with a knife. I was asked for an explanation of the Caspian seal's bizarre behavior. I had never before heard of attacks of this kind, and therefore turned to specialists who studied seals in various seas. Not one of the specialists had ever heard of seals attacking humans in the water. Then I realized that time was precious and sent the victim a telegram.

"The seal was rabid. Get inoculations at once."

But what rabid animal could have bitten the seal? I would have to conclude that the seal had been bitten by a rabid jackal while the sea animal, awkward on land, was resting on shore, basking in the sun. Such an assumption sounds closest to the truth, since jackals are numerous in the area, and rabies is widespread among them. As a reminder, rabies is transmitted from one animal to another via bites. Instances of rabid rats, mice and cats biting are not uncommon. We know even of an attack by a rabid sparrow. There was also an instance when a wolf who had lived for several years in an isolated cage contracted rabies from the bite of a rat.

If all rabid animals were destroyed, this terrible disease would be universally eliminated. It no longer exists on the British Isles, where such measures have been implemented. Dogs may be brought into the country only after a lengthy quarantine.

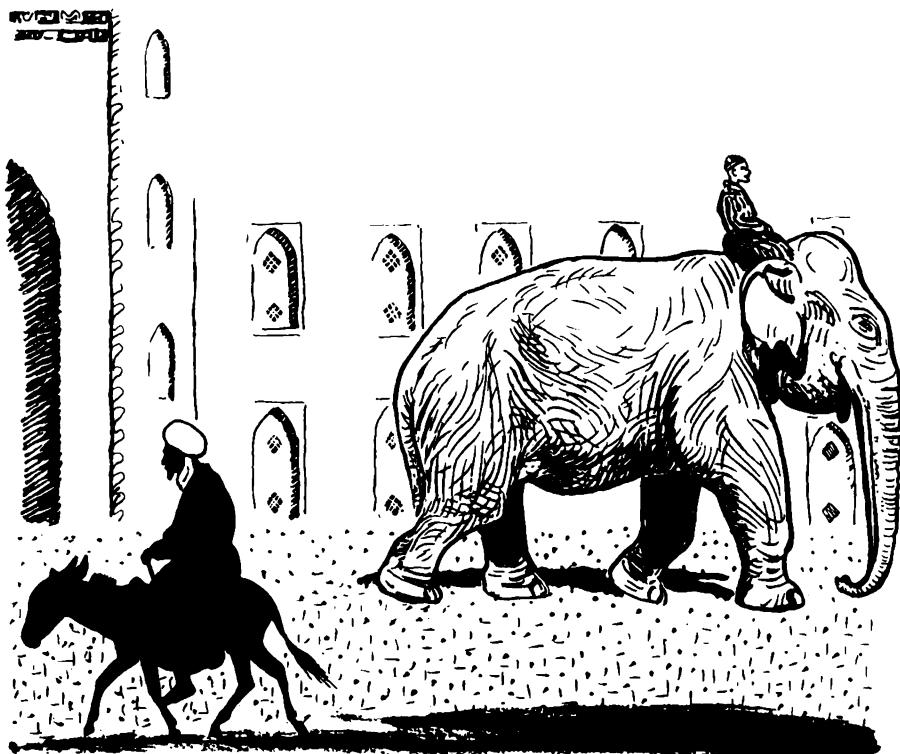


## Jin Dau

The Indian elephant Jin Dau lived in the Moscow Zoo for twelve years. And before landing in the zoo, she had rooted trees and smoothed highways with a big heavy road-roller in Bukhara (Soviet Central Asia). In the years of the civil war Jin Dau transported cannons.

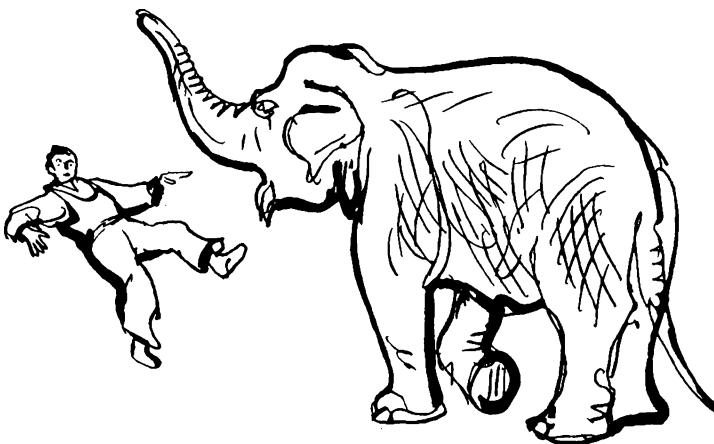
The elephant had lived in freedom in Bukhara. On a hot day she could be seen in a garden, where she would usually doze leaning against a tree.

Later Jin Dau was presented as a gift to the Moscow Zoo. We



were then faced with the problem of how to get the enormous animal to the capital. The elephant would not fit into any boxcar, and we deemed it impossible to try transporting her on an open flatcar. At last it was decided to build a spacious dwelling for Jin Dau on a large, four-axed flatcar.

When the structure had been completed, we set about business of relocating the elephant. Using her foot and her trunk, she tested the sturdiness of the floor of her "compartment" for some time before she risked stepping off the platform.



But at last she was on the flatcar, and the door to her mobile stall was securely locked.

The engine arrived. The engineer started the train moving slowly and carefully. However, the unfamiliar means of transportation frightened Jin Dau, and within a matter of minutes the animal had shattered the structure so securely built for it. Once under the open skies, the elephant calmed down immediately. Thus she was transported to Moscow on an open flatcar.

The elephant behaved herself well in transit. When she saw

the arch of a bridge crossing the railroad tracks, she bent her knees and squatted down. When an oncoming train would pass, our bulky "passenger" would move to the opposite side of the platform.

News that such an unusual cargo was being transported by rail spread faster than the train moved, and throngs of people would gather at the stations to watch. Jin Dau would hold her trunk out to them trustingly, begging for treats. She was generously presented with bread and melons.

At one of the stations Jin Dau suddenly let out a roar, snatched a tall boy out of the crowd with her trunk and sent him flying over the heads of those gathered into the thick of the roadside brush. Fortunately, the lad came away with only minor damages. He owned up at once to having pricked the elephant's trunk with a pin...

At last, on July 7, 1924, the train arrived in Moscow. Jin Dau marched through the city's streets from the station to the zoo at three o'clock in the morning. The guide rode solemnly on the huge beast's neck.

In spite of the late hour, a large crowd accompanied the elephant all the way to the gates of the zoo.

Jin Dau was possessed of extraordinary strength. When she wanted to go out for a walk, she would impatiently bend the massive iron bars of her enclosure. It so happened once that the heavy sliding door of her stall came off its tracks, and several men together were unable to move it with crowbars.

The men fussed for over an hour, trying to replace the nearly one-ton door with the help of levers, but the door would not budge. In jest someone summoned Jin Dau to help. She came at once, carefully moved the people aside and gave the door a nudge with her trunk. A second later the door was back on its track.

Bedding down for the night, the elephant would lie down on its side and stretch out its legs. The slumbering beast's snores would fill the entire building. But one had only to disturb her and she would be on her feet with a speed and agility that do not correspond in the slightest to our idea of this huge and seemingly clumsy animal.

When elephants are in the wild, their toes and the soles of their feet are worn down on rocks and uneven ground; in captivity they grow out. Therefore they must be cut. Jin Dau endured this sometimes painful procedure quite patiently. She would restrain herself. Whenever it became unbearable for her, the elephant would thump her trunk angrily on the ground, as if signaling the need for a rest.

On one occasion the person conducting this operation ignored the fact that the elephant had already given several hardy thumps of her trunk and even trumpeted loudly in warning. He went on filing the huge nails on her toes with a rasp file. Then Jin Dau lifted him gingerly by the neck, swung him in the air, and flung him out of her enclosure through two iron bars...

During her last two years at the zoo Jin Dau grew noticeably more feeble. She was seriously ill several times, and the signs of old age, setting in swiftly now, were ever more apparent. The elephant was now almost fifty-two years old. She began lying down more often and would noticeably drag her feet while walking.

While their enclosure was being reconstructed, the elephants were temporarily moved to the antelope pen.

There they did not feel at home. Jin Dau did not even dare lie down: she slept, her forehead pressed against the thick bars, which were seriously warped as a result.

In December of 1936 the elephant lay down and never got up again. Her girlfriend, the young elephant Manka, grew worried.

She rubbed Jin Dau's old legs with her trunk and tried to help her rise, but to no avail.

Two days later (December 23, 1936) Jin Dau passed away.

An autopsy of the elephant revealed that her four huge molars had become extremely worn.

In the twilight of her life Jin Dau was unable to chew her food; it would land in the hollow spots in her teeth and get trapped between the teeth and gums.

All of the huge elephant's organs were found to be extremely worn and weakened.

Their size and weight amazed us. Each kidney, for example, weighed up to 16 kilos, the spleen was nearly two meters long, while the diameter of the trachea was seven centimeters. The combined length of the intestines surpassed 30 meters.

The lungs weighed 100 kilos! It was also interesting to note that Jin Dau's brain weighed 4,420 grams, or nearly a kilo and a half more than the normal weight of an elephant's brain.

When we say that Jin Dau died a natural death, of old age, we often hear astonished replies of, "What old age?! The elephant wasn't even fifty-five years old, and they say that elephants live to be two hundred!"

True, this is what they say. But facts do not confirm such talk. According to the statistics of Henry Flower out of forty-four Indian elephants living in various zoological parks in Europe, only one male had ever reached the age of forty, while three females had made it to fifty or fifty-one.

Elephants living in India were not found to be any more long-lived when the determination of their age was approached with greater precision and not based on rumor. It is possible that some elephants might live to sixty, though such instances have yet to be recorded.

Generally speaking, it is difficult to imagine how such animals,

for whom everything is determined by the teeth, could live any longer. The elephant has but four molars: two upper and two lower. Elephants use these enormous teeth like grindstones to grind even thick branches. These teeth are gradually worn down and replaced by new ones (six times in life). The last new teeth grow in at forty, and within ten years they are already severely worn.

Jin Dau got her last set of molars some ten or eleven years prior to her death. Thus the aged elephant lived to the limit of her years, surviving even longer than most others of her species.

## Navvy Dogs

The slaughter-house in the city of Chkalov stood on the very outskirts of town.

Beside the slaughter-house was a deep ravine. Buried here were the corpses of animals in which veterinarians had discovered contagious diseases.



At first the corpses were piled in shallow pits, but this later proved to be a mistake: packs of dogs would gather in the ravine and easily dig up the buried carcasses.

The pits had to be made deeper.

Several people of Orenburg observed the work "methods" of the navvy dogs.

Mr. Kharitonov wrote about it in a letter.

"I was amazed at the order that reigns among the pack of

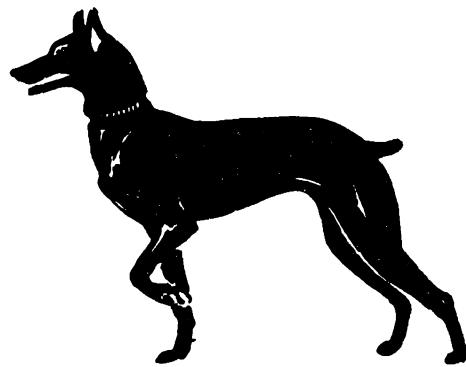
dogs engaged in the digging. As soon as the dog digging began to tire, it was immediately relieved by another. And the pit quickly became deeper and deeper..."

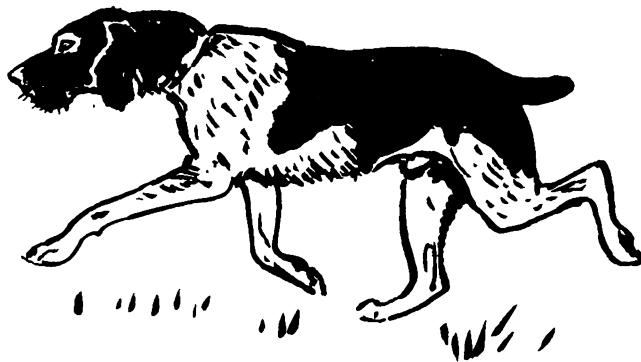
Indeed, hunters have frequently seen how quickly dogs can dig a large pit, and not only in loosened ground, but in untouched as well.

Sometimes during a hunt dogs will chase some small animal into a deep burrow and begin to dig it out, working its forelegs swiftly. This is no easy job, and the dog will quickly tire.

Panting hard, it will lie down to one side, and another, having stood by at ease up to this point, will relieve it. The shift usually takes place so quickly that the work does not cease for even a minute.

Resting, the four-legged navvy will watch its replacement attentively, and return to work just as soon as the other slows its movements.





### **When a Dog Does Not Smell a Duck**

“Some dog I’ve got! Can you imagine: a duck was brooding eggs, and the hound walked right by it, two paces away.”

Such was the indignant exclamation of one hunter. But the poor dog was not at all to blame: it is difficult to discover a brooding duck even with an excellent sense of smell.

As most people know, a bird has neither sebaceous nor sweat glands on its body. There is just one gland at the base of the tail. It is called the coccygeal gland and produces an odorous oily substance. A bird squeezes oil out of the gland and smears its feathers with it. This gland is particularly well developed among waterfowl, which is why they can stay in the water for so long and stay absolutely dry. No wonder they say, “Like water off a duck’s back.”

When a bird is brooding it does not smear its feathers with oil and thus loses the smell that enables dogs to sniff out its catch from several dozen meters. This peculiarity saves feathered creatures during the brooding period: when the odor is absent it is difficult for predators to find them. What’s more, the oil from the feathers would inevitably get on the eggs and block the pores in the shell through which oxygen passes, and the future nestlings would suffocate before ever hatching.

But just as soon as the ducklings are hatched, the mothers take to preening their feathers once again, quickly covering them with an oily layer. A drop of oil squeezed from the gland over the tail, flows along the horny ridges of the bill, through which the duck draws every individual feather, as if through two oiled cylinders. The bird smears its head and neck last, drawing them across its oily feathers.

Ducklings hatched in an incubator often get wet and even drown in water, while ducklings under the watch of a mother duck will swim for hours and climb out of the water virtually dry.

It is not hard to guess the secret here: warming themselves beneath their mother's body, the ducklings are in contact with her oily feathers; their down also becomes covered with oil which keeps them from being soaked in the water. The "orphans", on the other hand, have no access to the oil and they are still incapable of properly preening their own feathers. Their down often gets soaked in the water and, weighted down, they go under, while those who make it to shore often then freeze to death.





### Sun Baths

It is perhaps a well-known fact that without the sun's rays no mammal can develop properly. But how do those animals, such as badgers, who dwell in dark burrows and go out for prey only after sunset raise their young? For their underground apartments have no windows, and just the same, young badgers undoubtedly require sunshine.

This question roused our curiosity. Teams of junior biologists from the zoo set up twenty-four-hour surveillance on some badger burrows, and thus succeeded in finding out.

They discovered that on clear days the mother badger would carry her children out into the fresh air. Gripping the youngling gingerly in her teeth, the mother would carry it to wherever the sun was shining. She never left the little badgers under the direct rays of the sun, but found spots for them under a bush or tree where the sun's rays were filtered by foliage.

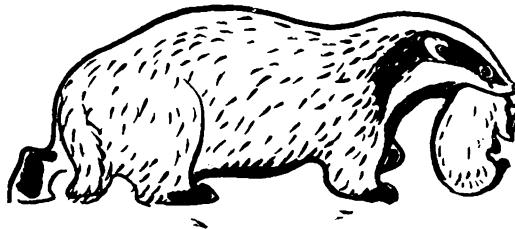
Everything is good within reason, and this is especially true of sun baths. The badger-mother would hastily carry her blind children back to the burrow just as soon as they began to squeal. In such instances she would really rush, often trying to seize in her teeth not one but two badgers at once.

Such haste is by no means ungrounded: sun strokes are not

uncommon among the little animals, accustomed to darkness.

Sunshine is essential to animals, however abuse thereof can prove dangerous. The sun takes getting used to, that is, exposed parts of the skin need to tan. In this way a light filter of sorts is created, admitting a reasonable amount of light rays, ultraviolet included.

The mother badger's behavior toward her young guarantees them just the dose of sunlight that is beneficial and not detrimental to their health. This behavior was developed through natural selection in the process of survival of the fittest.





### **An Autumn Diet**

Every summer willow grouse, hazel hens, blackcocks and capercaillies contract worms.

It would seem that birds infected with worms would die come winter: for how can these birds survive the frost on scant winter feed, with the presence of intestinal parasites to boot? Nevertheless, this wildfowl does not die of worms in the winter; for in autumn, when snow covers berries and grass, we find neither flatworms nor roundworms in the intestines of coniferous wildfowl. Come autumn, the capercaillie, for example, begins eating large quantities of larch, pine and cedar needles. The strong smelling (phytoncides) and tannic elements contained in the sap so strike the worms that they are expelled with the undigested food wastes.

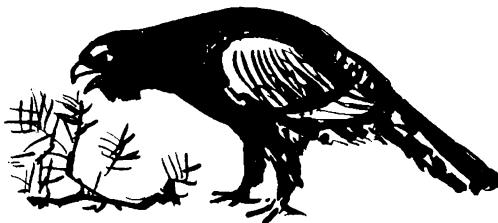
The bird digests the needles themselves only by about ten to fifteen percent, the remaining mass of roughage collecting in the large intestine. Once the bird has switched to rough feed, its intestines cleanse themselves of the parasitic worms in a few days.

Of tapeworms but a few heads, embedded in the intestines, remain, while the entire tape is detached and expelled. In the long-term struggle for survival, only those birds which switched over to a "healing diet" in good time and passed these habits (reflexes) on genetically have endured.

In the zoo our wildfowl of the grouse family cleanse themselves of worms for the winter without coniferous needles, but much slower and not in all cases.

Herbivorous mammals, too, have their own seasonal "medicinal" feed. For instance, steppe cows and other hoofed animals switch to wormwood. The aromatic oils of the bitter wormwood do an excellent job of expelling the worms that could cause livestock on rough and poor winter feed to become emaciated. Were wormwood not included in the steppe hoofed animals' seasonal "menu", parasites coupled with scant feed would lead to the death of many of these animals.

Moose cure themselves of worms by consuming swamp shamrock, while many deer nibble hellebore, poisonous for horses.



## The Biography of Newborns

Life was a bustle as usual on the pond. An incessant hubbub hung over the zoo.

I strolled slowly along the shore with one of the junior biologists. Suddenly we caught sight of a tiny blind kitten at the bottom of the pond not far from shore. A ray of sunlight cast a quivering patch on its little body, covered with a fine coat of green algae, like mold.

My companion pulled the kitten out. The stiff animal gave no signs of life. The kitten appeared to have been long drowned.

While we were looking it over, water trickled from the kitten's nose, while its body warmed a bit in our hands, and suddenly the little creature shuddered.

Gradually life returned to it.

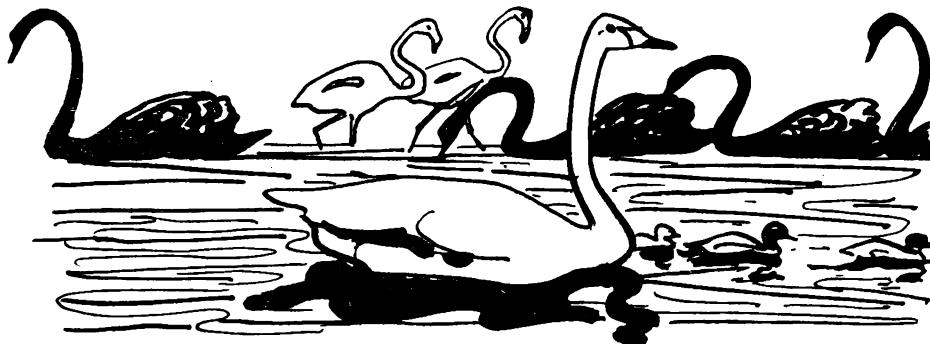
Saved from death, the kitten was given over to the guardianship of a cat who was feeding several black ferrets. Thanks to her care, the foundling quickly strengthened, and when it had grown up a bit it went to live with one of the zoo's researchers.

How was the kitten able to return to life so easily? For it had become as cold as the water in the pond.

Fact is that in the embryonic stage all animals to a known degree repeat the evolution of their distant ancestors. For a time after their appearance on earth, younglings differ in many ways from adult animals, reminiscent in certain ways of their distant ancestors, found on a lower level of development. The majority of mammals, for example, have a constant body temperature of about 37-38 degrees Celsius. The young of these animals, however, in particular those born blind, begin to cool very quickly if they do not receive warmth from without (by huddling close to the body of their parents, for example). Most likely the body of an adult dog cannot be cooled below 27 degrees without causing

death; we succeeded in cooling newborn puppies, however, to a temperature of 10 degrees or even less. In such a state they would become absolutely motionless, but when warmed, they would come back to life. We know of a multitude of instances when entire litters of wild animals would become so cold they seemed dead. But they had only to be warmed in order to return to life, and then develop normally.

After one cold night in the zoo two young of a European mink became stiff and stopped moving; warmed over a stove, they too came back to life.



The young did not die, of course, but life glimmered so faintly in them that we could not detect it at all with the naked eye. Cooled to a temperature slightly below freezing, totally exposed baby rabbits brought into a warm room began to breathe, and, once having raised their body temperature, to suck their mother's milk.

This is even more true of birds, whose distant ancestors, like those of mammals, were ancient reptiles with no constant body temperature. True, the constant body temperature of adult birds is high—as much as 44 degrees Celsius among small birds. How-

ever, in a number of other aspects birds are much like reptiles. This likeness is apparent in many ways: on the skin of birds, as on that of reptiles, sweat and sebaceous glands are absent (with the exception of the one coccygeal gland near the tail); the secretions of birds, like those of reptiles, contain uric acid; the wing tips of some birds—coots, landrails and ostriches for example—still bear claws, while the legs of all birds have horny scales. Those birds which are hatched blind and featherless are particularly reminiscent of reptiles: they begin to cool quickly if there is nowhere for them to get warm, while all their vital signs become virtually undetectable. When they receive warmth from without, such nestlings not only come back to life, but even become more energetic than before. Researchers N. Kalabukhov and A. Ryumin, once junior biologists at the Moscow Zoo, cooled sparrow nestlings to five degrees Celsius.

In this state the nestlings appeared as stiffened corpses, but when they were warmed they became active and opened their beaks wide, asking for food.

I have witnessed on a number of occasions how quickly just-hatched thrushes or chaffinches freeze into motionlessness when the parents who warmed them are frightened into leaving the nest. However, the temporary cooling did not harm the little birds in the slightest, and they subsequently developed quite normally.

The same can be said of the chicks of brood birds, which begin to run around independently shortly after coming into the world. At this time the mother functions as a kind of oven near which the chicks can find warmth.

Many have probably seen how a hen strolling in a yard will sit down from time to time and gather her young under her wings. She hugs the little chicks, warming them with her hot body.

Thus the body temperature of chicks fluctuates rather frequently: the chicks will become cold, running freely, then warm up be-

neath their mother's wings. We have noted that such jumps in temperature strengthen the chicks and accelerate their growth. A similar phenomenon may be observed among reptiles, and, in terms of temperature fluctuations, chicks resemble them more than they do adult birds. Reptiles receive a warm charge from the sun by day and cool off considerably in the course of the night. What's more, they function less effectively at a consistently high temperature than at a fluctuating one. Therefore, in terrariums where snakes, lizards and tortoises are kept, the reptiles will gather round beneath the electric lamps, then, having heated themselves to 36-37 degrees, become very energetic and crawl off into the shade. They do not endure captivity well when the air temperature is kept consistently high. Knowledge of these peculiarities can have practical significance as regards domestic birds.

Until quite recently poultry farms always kept chicks in warmth and were afraid to let the temperature drop even a few degrees. As a result of this fear, which still not all have abandoned, weak and undersized chickens were produced.

The historically established demands of a given animal's organism on its environment must be taken into consideration in order to ensure their normal development.



### **The Voracious Python**

A royal python was sent to Moscow from India. This is one of the largest snakes to inhabit the earth. This giant was nearly eight meters long and weighed one hundred twenty kilos.

These gigantic snakes harbor enormous strength. With the rings of their mighty bodies they encircle animals and crush their chests, as if with a steel vice.

The captured animal stops breathing: the terrible embrace suffocates it. And when the final seizures pass over the victim's body, the snake releases its rings and, beginning with the head, swallows the motionless animal whole, sating its appetite for a month or more.

The python never breaks its victim's bones, though it could easily shatter them. Snakes developed this peculiarity over the course of many many centuries as a beneficial adaptation to their eating habits: broken bones would pierce the skin of a captured animal and hinder the snake in swallowing its catch.

The fattest part of our python's body measured thirty centimeters in diameter, but about two days after having swallowed one of its regular suppers, its body would become incredibly inflated with gases.

At the zoo the python was fed piglets, and sometimes even pigs

weighing as much as thirty kilos, but seeing how wide the snake's mouth could open, it seemed capable of swallowing even far larger animals.

There was an instance in the Moscow Zoo when one of the pythons made its way into the neighboring enclosure of adult crocodiles. It crushed one of them and swallowed it whole. Some worried about the consequences of such an excess; doctors even suggested that the crocodile be surgically removed. But in the course of a few days the python digested the catch, with the exception of the crocodile's claws and scales, found later in the python's excrement.

The python that fed on piglets digested them easily in its gastric juices; only the fur, hooves and tooth enamel was left undigested.

The rate of digestion depended entirely on how warm it was in the terrarium. This is understandable since snakes, like crocodiles, lizards and tortoises, do not have a constant body temperature.

The python is nonvenomous. Poisonous snakes—cobras, vipers and others—kill their victims with venom which they dispel into the blood of the bitten animal via furrows (the cobra) or canals (the viper, Levantine viper, rattlesnake), that run the length of the two large venomous and mobile fangs of the upper jaw. Sometimes a bitten animal manages to flee and dies far away from the snake, but nevertheless the latter will find its prey.

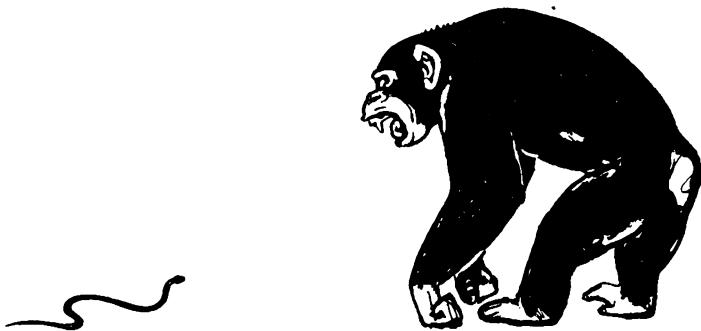
The snake follows the animal's trail, perceiving the ground and the surrounding bush with its long forked tongue, incorrectly referred to by many as a "stinger". The sensitivity of this organ is exceedingly acute; the tongue takes the place of the sense of smell, which the snake lacks.

The grass-snakes that inhabit an open enclosure in the zoo by summer engage in persistent frog chases. Slithering through the grass along their trail, the snakes snatch up the frogs only when the latter have grown too tired to jump and are merely crawling.

Commonly found in literature are assertions to the effect that

snakes "charm" their victims, hypnotize them with their eyes. This is completely false. The constrictor, or python, attracts the attention of hooved animals, rodents and other animals with its motionlessness and the shimmer of its scales. Once it has noticed its catch, the python curls into rings and patiently awaits the animal's approach.

In the meantime, the animal, intrigued by the python's appearance, begins surveying the unknown figure, coming so close in doing so that the python easily grabs it in its teeth and has it wound inside its muscular rings instantaneously.



Snakes rarely let a potential victim get away, and will not touch one when sated, thus animals have no experience in fighting this dreaded enemy.

Monkeys have the greatest success in escaping the snake's merciless embrace. No wonder these encounters put them on their guard, for even a tall tree is no obstacle to a snake, and the majority of snakes creep around by night while monkeys sleep. A chimpanzee, who will gaze down self-confidently at the mightiest of predators, seeks refuge in terror at the mere sight of a snake.

Such is the result of natural selection and individual experience acquired during encounters with snakes—monkeys' all but singular

serious enemy. At home in the tropical forests of Africa, where a multitude of various snakes, including extremely venomous ones, breed, it is with utmost caution that the chimpanzee approaches tree hollows in search of birds' nests and eggs: for in every hollow it may find not a bird but a poisonous snake.

Several years ago the Moscow Zoo received two chimpanzees from abroad; the male's name was Hans, the female's Liza.

They lived together in one cage. Hans stood out for his athletic build and very belligerent disposition. No one dared enter his and Liza's cage, for jokes could easily go awry with such a brute. We were at a loss when the need arose to move the couple to a different enclosure. Indeed, how does one approach a ferocious beast and convince him to climb into a portable cage to be taken to new "quarters"?

We put the door of the portable cage right up to that of the monkey's cage and began luring the chimps into it. Liza entered rather eagerly, but Hans was stubborn. Soon he flew into a rage, emitting threatening cries and racing about in every direction.

The enraged animal would respond to no urging. Then we sprayed him with a jet of cold water from a fire hose, but this did no good either. What's more, by this time Liza too had become agitated by the commotion and cries and returned to the original cage to Hans' side.

The chimps outright refused to enter the portable cage, and Hans raged more and more.

Then the director of the zoo's primate sector decided to employ the last resort.

"Go get a grass-snake," he said to a junior biologist.

A few minutes later a grass-snake was delivered in a canvas sack.

The snake's black body had barely appeared out of the bag when a wild terror struck the wilful Hans.

Eyes bugged, he first assumed a defensive pose, but then imme-

diately began backing away, drawing in his legs and glancing around helplessly.

The snake was let loose; it creped closer and closer. Liza had long ago made a beeline for the portable cage and was huddling in the far corner there. With a shriek, Hans at last flew in after her. We closed the door and carted the chimps away to their new accommodations.

Hans was nervous and agitated all day, unglued by the sight of the harmless grass-snake.

Poor Hans! How does one go about explaining that a grass-snake is not a venomous cobra and only little fish and frogs have reason to fear it?

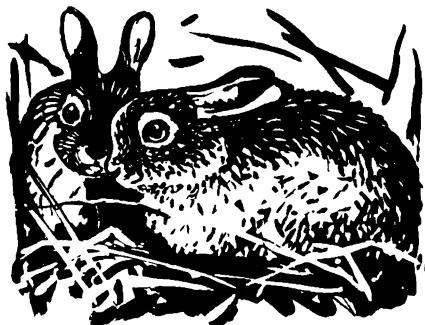
## Trail and Pursuit

Newborn rabbits, first hastily licked by their mother, rush to her nipples. Once sated and rested, they scatter, and then sit motionless in the grass for two, three or even four days. During this time they take no nourishment, since their stomachs still have an adequate reserve of thick, fatty mother's milk—six times richer than cow's milk—from the first feeding. As long as the rabbits do not move from their spots, not even their mother can find them. Why is that?

It is explained by one peculiarity of rabbits which saves them from being hunted by enemies. The skin of a rabbit's torso contains no sweat glands; these glands are found only on the underside of the paws. When moving around, the rabbit cannot but leave a scent, and by following this scent the predator can easily find it. If a rabbit stays in one place, keeping its paws pressed to the ground, neither a hound, nor wild predators will discover its existence. But the farther a hound chases the rabbit, the more profusely the latter's paws sweat and the more distinct becomes its trail. This is why dogs will so stubbornly pursue one and the same rabbit and pay no attention to the trails of others who emerge from their lairs once the hunt has begun.

The baby rabbit's smell while lying down is further weakened by the fact that it has no secretions the first few days: evidently its organism assimilates virtually all the milk, while any excess water produced during the breakdown of the fats is expelled in the process of breathing.

At the zoo we walked a tame fox on a leash in the vicinity of the baby rabbits hiding in the grass, and the animal, which has

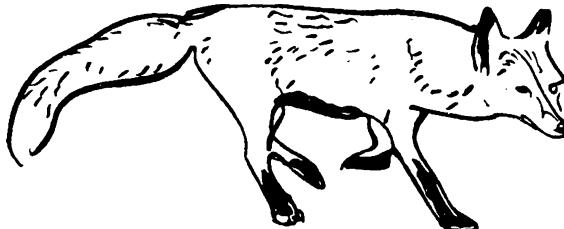


a keen sense of smell, never detected them. The same fox immediately fell into a state of agitation and charged forward just as soon as it came on a rabbit's trail. While the secretions of the sweat glands on the rabbit's paws betray it to predators, at the same time they aid the rabbit in flight, keeping snow or damp earth from sticking to the thick fur of the rabbit's paws, thus helping it run faster.

In passing, let us say a few words about the fox's trail. Every hunter knows that the prints of fox's paws differ markedly from those of a dog's. A dog's paw leaves a distinct track with sharply defined prints of the exposed pads of the toes. The track of a fox's paw, on the other hand, has softer contours. This is explained by the fact that the paws are covered with long thick hair, allowing the animal to move about in winter as if in snowboots.

Owing to this peculiarity, the fox never injures its paws, even on the sharp edges of a broken layer of ice on the snow. But let a dog run across the very same field and its trail will be spotted with blood. However, there is a difficult time in the fox's life. At the end of August and in September, during shedding season, the hair on the pads of a fox's paws falls out, and the animal loses its usual speed. New hair begins to grow in on the pads, and at the start it is short and stiff. Then the fox walks as if on needles, as hunters say, it "favors its paws"; during this time it is incapable of running for long, and even an ordinary mutt can overtake it.

Later on, in about thirty days, the fur on the pads of the paws grows out; bending, it covers the paws, and then the danger period in the fox's life comes to an end.



## Salt Starvation

It is not uncommon for feathered guests to come calling at the zoo from the outskirts of Moscow. Most often these are sparrows, and occasionally migrating flocks of goldfinches, bullfinches, siskins and redpolls. The birds race to the animals' feeding troughs, though probably they experience no hunger. Most of all they are attracted by the salt that usually lies in large chunks in the troughs of the hooved animals.

In nature, which seems to us so harmonious, there is in fact discord. For example, the majority of animals feeding primarily on plants experience salt starvation in the wild. We have had many occasions to watch land turtles lick salty drops of dew off tamarisk leaves or make use of saline soil patches—places where salt has risen to the earth's surface. Cows, sheep, goats and horses will lick salt greedily. Starved for salt throughout the winter, come summer deer go to salt patches and gnaw deep holes in them.

Once I held out a handful of salt to some ostriches in the zoo; they snatched it up excitedly and would subsequently become agitated whenever I happened to walk by. Squirrels, rabbits, voles and many other animals require salt.

Very often wild animals are forced to migrate to new places just to give their "insipid" blood a good dose of salt. Moose, northern deer and other animals occasionally make long pilgrimages to the

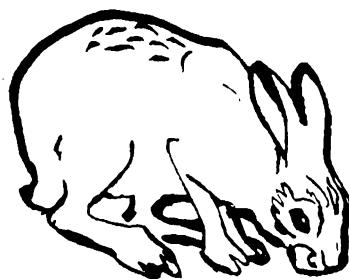


seashore, where they lick the salty foam that remains when the surf retreats.

With the exception of beasts of prey, almost all creatures suffer a salt deficit, and when they cannot obtain enough, the animals experience fatigue and loss of appetite.

Beasts of prey do not know salt deprivation because they receive the necessary dose of salt from the meat, bones and blood of the herbivores they consume.

The situation among herbivores, however, is another altogether. Plants comprise their sustenance. Plants contain little sodium chloride (i.e., common salt), since the roots selectively elicit potassium salts from the soil. Remember that fields are fertilized not with sodium salts but rather potassium salts. And only when the herbivorous animals come to the saltmarsh and lick the common salt or sodium sulfate there do the sodium salts displace the unnecessary excess of potassium in the herbivores' blood, which is expelled from the organism with the urine. This is why not only moose and roe, but also rabbits, squirrels, many kinds of mice, and flying squirrels in northern forests respond so eagerly to an artificial supplement of salt. They all suffer from a deficit of salt, without which the composition of their blood becomes abnormal, while their gastric juices lack hydrochloric acid, essential to digestion. Without salt animals become sickly and more susceptible to various ailments. It is no wonder therefore that salt is the best bait for animals.



## A Danger Signal

A plane flies low over the zoo, barely clearing the treetops; beyond the wall a trolley car rumbles along its tracks, automobiles roar and sirens wail. And yet, there is no agitation in the pens and cages. Having become inmates of the zoo, all the animals quickly adjust to the din of the city, to all sudden noises. Remarkable, however, is the fact that those sounds which are usually associated with approaching danger in nature always incite agitation among wild animals, even old-timers who were born in the zoo.



One of our junior biologists once took a white rabbit by the ears and hind legs in order to transfer it to a different cage. The hare became frightened and let out a squeal. At that instant all the moose within ear shot of that shrill little cry began racing about their pens in terror. To them the rabbit's cry was a danger signal, for in the wild it is the cry the rabbit lets out when overtaken by a wolf.

When a raven appears in the vicinity it does not incite particular fear in the young of wildfowl. But the abrupt, alarming croak with which this bird bravely flies up to meet predators will cause the young of willow grouse, ducks and blackcocks to hastily seek refuge

wherever they can. And although the raven itself destroys a certain share of the young of wildfowl, it saves the majority from death with its peculiar cry, warning all feathered creatures of the approach of a perilous wolf, fox or hawk.

If the distinctive chatter of the magpie sounds, even large animals run for cover, since the magpie is usually disquieted by the sight of a human in the forest.

The shrill, barely audible squeak of the blue tit is also perceived by all as a danger signal; then not only songbirds, but even grouse crouch down on branches, freezing into motionlessness. The blue tit's squeak warns of the approach of a hawk or falcon. It saves even the speckled woodpecker, carried away in its work. At this danger signal the woodpecker escapes attack in time, since the blue tits often hover about its "workshop".

A kite begins circling over a yard where a dozen downy yellow chicks scurry about carelessly. Upon seeing the predator the rooster first lets out an alarming "coo", followed by the broody hen's "croo", and in a flash the entire brood has darted for cover in the grass or beneath their mother's wings.

What makes these chicks seek refuge when they have never actually experienced the powerful grip of a bird of prey's talons?

For many many thousands of years birds have had to defend themselves from enemies—be they feathered or four-legged predators—and in this struggle the only ones to survive were those who inherited various useful traits from preceding generations. In this case that useful trait was the reflex that caused the little birds to seek refuge at the very first alarming cry of their mother. Academician Ivan Pavlov referred to such reflexes as "unconditioned", since they will appear without fail each time under certain conditions and are a hereditary form of behavior.

Once we demonstrated this phenomenon to some junior biologists at the zoo. In an incubator the eggs of the Australian emu, having

been placed there 47 days earlier, were expected to hatch in two days. In the meantime it was still possible to detect their steady but very faint breathing with the ear alone.

We took the eggs out of the incubator and laid them on the glass. The eggs lay still, quivering ever so slightly. Then, imitating the alarmed cry of the male emu, I let out a short rumbling cry: “Br-r-r!..”

The eggs immediately started and began to roll. The yet unhatched emu babies inside the eggs had begun moving their legs, as if hastening to run from “danger”.

“But how?” the kids asked me. “Our emu babies grew up in an incubator and never even heard their parents’ cry!”

“That’s the whole point!” I told them. “When they hear the anxious cry of their parents, the baby birds run for cover not because they have been in a predator’s talons and have thus gained life experience, that is, a conditional reflex. No, this is an inherent, unconditioned reflex, passed down genetically. It is essential to the survival of the emu’s offspring and is a defensive reaction of the young birds, fixed in the genetic make-up of these birds by natural selection.”

Anyone who so desires can repeat the simple experiment described here by taking ordinary chicken eggs a day or two before they are to hatch. The trick is to reproduce exactly the cry the mother hen lets out at a moment of danger. The result will be the same as with the emu eggs.

But birds are not the only creatures saved by a danger signal sounded in good time. Many other animals living in communities under the same conditions will also respond to it. Let me give a few examples.

While in the Altai mountains, one naturalist and gamekeeper watched some marmots nibbling grass and basking in the sun. From behind a large rock, through powerful binoculars he noticed that

a group of wild rams was moving toward the marmots. The marmots did not react to them at all, while the rams, having reached the center of the marmot colony, lay down on the grass and soon went to sleep, laying their heads with their fifty-pound horns on the ground. Under ordinary circumstances wild rams do not sleep, but merely doze, constantly on their guard; they prick up their ears, turn their heads from side to side and awake frequently. But here the rams slept like logs. Finally it came time for the naturalist to abandon his post. Appearing from out behind his cover, he fell into the marmots' visual range, and the air was instantly filled with sharp cries—the entire colony was whistling. At the sound of this danger signal the rams leaped to their feet and raced up the slope. Apparently these wild animals, hunted by wolves, snow leopards and other predators, rarely get a chance to sleep soundly. Only among the marmots—faithful guardians—can they truly rest.

One evening I heard the anxious cry of a black thrush: "Chen-chen-chen." It seemed to be warning the whole forests of a danger creeping slowly up to the edge of the wood. Quickly and noiselessly, coming from downwind, I started up a forest path. The sounds grew closer; it was now possible to make out the robin's "indignant" chirping. From around a bend a wolf moved unhurriedly, glancing around furtively, and the birds came after him, fluttering from branch to branch. A gunshot felled the bandit, and the forest hubbub soon died down.



## Desert Ship

It is by full right that the camel has come to bear the title "desert ship", as it has served as the sole means of transport across the sweltering sands of parched deserts for hundreds and hundreds of years.

The camel is a remarkably stalwart creature. Filling up on good feed, it stores an enormous reserve of fat in its hump, and then roams the desert without food or water for ten days or even more. The camel's hump is in fact a whole warehouse of fat reserves weighing as much as two hundred kilos.

For an entire week a caravan moves across the parched desert, and there is nowhere for the camel to drink. And yet it marches calmly onward, experiencing no thirst or fatigue. Only its hump grows smaller with each day. For a long time people did not understand the source of the camel's endurance. The camel became the hero of many a tall tale. It was even believed that the camel sensed the approach of a long journey ahead of time and before the caravan's departure drank an incredible amount of water, storing it in the "pockets" of its cicatrix and reticulum—the first two parts of its complex stomach. Of course, this is nonsense. Studying the



desert life of Central Asia and crossing with caravans on several occasions, we performed autopsies on many a camel, but never found anything in their stomachs besides a small quantity of bitter, foul-smelling fluid swarming with the infusoria and bacteria normal among animals.

“But where does this ‘desert ship’ get its water?” our reader may ask. The camel gets it from its hump. It gets it with the break-up of fat during the hungry journey. In this process more water is produced than the original weight of the stored fat, since by means of oxidation the products of the break-up are joined by oxygen from air absorbed by the lungs during breathing. If you take ordinary beef fat you will find that for every one hundred parts obtained during combustion you will get an average of 112 parts water and 182 parts carbonic acid emitted by the lungs. On account of the energy released during the break-up of fats, the camel is able to do its job—to move across the hot sands with caravans.

Let us return to the bitter fluid, a small quantity of which is ever present in the “pockets” of the first two sections of the camel’s stomach. This mucous fluid is by no means capable of replacing the expenditures of water in the camel’s organism, but rather serves as a kind of ferment: here infusoria and bacteria find a favorable environment. These microorganisms accelerate the production of cud, which incites fermentation in consumed food. The infusoria and bacteria themselves reproduce in an enormous quantity; after a belch the camel digests them in its rennet bag and in this way obtains animal proteins valuable to its organism (as do other ruminants).

In the many thousands of years of life in the desert, the camel has adjusted to its specific conditions.

For example, we find large calluses on the legs and other parts of these animals’ bodies. But these are not the same kind of calluses we get from uncomfortable footwear. The fact is that the desert

sun can heat the sand to temperatures that can cause serious burns on contact. The camel is protected from sores and burns by these calluses.

Fat-rumped sheep are also capable of crossing the desert without food or water on account of the fat stored in their tails and hind quarters. But the desert is inhabited by other animals—the goitred gazelle, for instance—who do not have these fat reserves like the camel's. Their life is somewhat more difficult: the gazelles are saved from lack of food and water by their legs alone, for these light animals are so mobile they can run to drink at a stream more than several dozen kilometers away. In search of food they swiftly cover great distances and find appropriate pastures.

